AppsFactory Insurance Premium Calculation Project

The purpose of this technical document to write down the steps required to run the Demo project developed in Spring boot with Java 11.

The zipped file named “premium-insurance-calculation-project” can be downloaded from the link file section provided in the email.

Link: https://drive.google.com/drive/folders/1-x6wFeLwdd4Bk9eYdFFm3cesaC3a8yma?usp=sharing

Download the file and extract all the folders to your destination folder.

The folders contain the following the project.

1. **api-gateway**
2. **naming-server**
3. **location-services**
4. **auto-services**
5. **mileage-services**
6. **premium-insurance**

Prerequisites (System Environment)

- Java 11
- Maven

(Optional - Not done)

a) Unfortunately, the docker-compose file is not setup to run the project easily and make it platform independent as it is not mentioned in the task requirement.
b) The User Interface is not designed to calculate the Premium Insurance as it was an optional task.
c) Database’s setup is not required as In-Memory H2 databases is used in the demo project.

Start Up Spring Boot Applications

Run Naming-Server

Our task is to run each project individually. Therefore, go the destination folder where you extracted all the files of the project and run the following commands in the command prompt.

- Navigate inside the naming-server project to run the project with the help of maven commands.
    - Run the following command in the destination folder to navigate inside naming-server project.

```
cd naming-server
```

- Run the following command to run the naming-server as spring-boot project.

```
mvn spring-boot:run
```

Run API-Gateway

Our task is to run each project individually. Therefore, go the destination folder where you extracted all the files of the project and run the following commands in the command prompt.

- Navigate inside the api-gateway project to run the project with the help of maven commands.
  - Run the following command in the destination folder to navigate inside api-gateway project.

```
cd api-gateway
```

  - Run the following command to run the api-gateway as spring-boot project.

```
mvn spring-boot:run
```

Run Location-Services

Our task is to run each project individually. Therefore, go the destination folder where you extracted all the files of the project and run the following commands in the command prompt.

- Navigate inside the location-services project to run the project with the help of maven commands.
  - Run the following command in the destination folder to navigate inside location-services project.

```
cd location-services
```

  - Run the following command to run the naming-server as spring-boot project.

```
mvn spring-boot:run
```

Run Auto-Services

Our task is to run each project individually. Therefore, go the destination folder where you extracted all the files of the project and run the following commands in the command prompt.

- Navigate inside the auto-services project to run the project with the help of maven commands.
  - Run the following command in the destination folder to navigate inside auto-services project.

```
cd auto-services
```

  - Run the following command to run the auto-services as spring-boot project.

```
mvn spring-boot:run
```

Run Mileage-Services

Our task is to run each project individually. Therefore, go the destination folder where you extracted all the files of the project and run the following commands in the command prompt.

- Navigate inside the auto-services project to run the project with the help of maven commands.
    - Run the following command in the destination folder to navigate inside mileage-services project.

```
cd mileage-services
```

    - Run the following command to run the auto-services as spring-boot project.

```
mvn spring-boot:run
```

Run Premium-Insurance

Our task is to run each project individually. Therefore, go the destination folder where you extracted all the files of the project and run the following commands in the command prompt.

- Navigate inside the auto-services project to run the project with the help of maven commands.
    - Run the following command in the destination folder to navigate inside premium-insurance project.

```
cd premium-insurance
```

    - Run the following command to run the premium-insurance as spring-boot project.

```
mvn spring-boot:run
```

Microservices Registration and Discovery with Spring Cloud and Netflix Eureka

Hence, our all microservices are registering with Eureka Naming server and cannot be accessed individually. All the services must access through the api-gateway to perform the necessary actions.

Accessing Premium Insurance API to Calculate Premium Insurance Value.

Description

The Annual Insurance Value request to get the value of the premium insurance based on location (postcode), the mileage of the car (mileage) and the car type (auto).

API Request

http://localhost:8765/insurance/insurance-calculator/<postcode>/<mileage>/<auto>

Key	Description	Format	Type
postcode	Location postcode	Integer	Mandatory
mileage	The number of mileage driven by car	Integer	Mandatory
auto	Car type	Integer	Mandatory

Example of Get Request

http://localhost:8765/insurance/insurance-calculator/79189/100/BMW

Response

{

- **uuid**: "6eed5109-9631-4e2e-a98c-31d5b6d0db8c",
- **countryISO**: "DE",
- **location**: "Bad Krozingen",
- **postcode**: 79189,
- **regionalFactor**: 1.8032957213724221,
- **autoType**: "BMW",
- **autoTypeFactor**: 1.2,
- **autoMileage**: 100,
- **mileageMinimumValue**: 0,
- **mileageMaximumValue**: 5000,
- **autoMileageFactor**: 0.5,
- **currency**: "Euro",
- **annualPremiumInsurance**: 1.08

}

Key	Description	Format	Type
uuid	The unique transaction Id	**Uuid**	Mandatory
countryISO	The country name where the postcode belongs	**String**	Mandatory
location	The name of the location where postcode belongs	**String**	Mandatory
Postcode	The postcode of location	**Integer**	Mandatory
regionalFactor	The regional factor	**Double**	Mandatory
autotype	The auto type	**String**	Mandatory
autoTypeFactor	The type factor	**Double**	Mandatory
autoMileage	The range of auto mileage	**Integer**	Mandatory
mileageMinimumValue	Minimum value of the range mileage	**Integer**	Mandatory
mileageMaximumValue	Maximum value of the range mileage	**Integer**	Mandatory
autoMileageFactor	Mileage Factor	**Double**	Mandatory
Currency	Type of Currency	**String**	Mandatory
annualPremiumInsurance	***The annual premium insurance value calculated based on the parameters***	**Double**	Mandatory

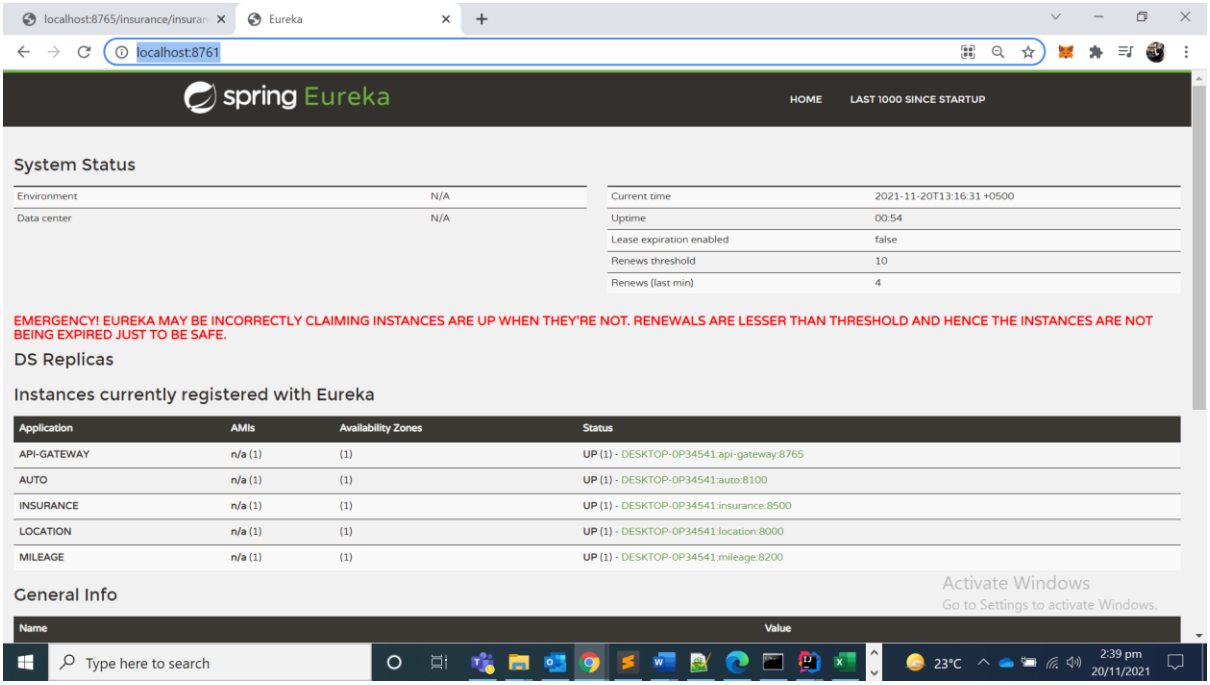
API-Documentation.

The API documentation of all the microservices is given below that Include request type, request example and response.

Naming-Server

There is no API documentation for the naming server. However, if the user wants to see the services registered with the Eureka server can see at the following URL.

http://localhost:8761/



API-Gateway

The API Gateway is used as the entry point for client to access the microservices.

Location-Services

1. Get Request

Description

The regional factor value based on the postcode.

API Request

http://localhost:8765/location/postcode-factor/<postcode>

Key	Description	Format	Type
postcode	Location postcode	Integer	Mandatory

Example of Get Request

http://localhost:8765/location/postcode-factor/79189

Response

{

- **id**: 1,
- **countryISO**: "DE",
- **stateISO**: "DE-BW",
- **regionOne**: "Baden-Württemberg",
- **regionTwo**: "Freiburg",
- **regionThree**: "Breisgau-Hochschwarzwald",
- **regionFour**: "Bad Krozingen",
- **postLeitZahl**: 79189,
- **ort**: "Bad Krozingen",
- **regionalFactor**: 1.8032957213724221,
- **status**: "ACTIVE"

}

Key	Description	Format	Type
id	The unique Id	**Integer**	Mandatory
countryISO	The Country name in ISO 3166 standards	**String**	Mandatory
stateISO	The State name name in ISO 3166 standards	**String**	Mandatory
regionOne	Region One	**String**	Mandatory
regionTwo	Region Two	**String**	Mandatory
regionThree	Region Three	**String**	Mandatory
regionFour	Region Four	**String**	Mandatory
postLietZahl	The postcode of the location	**Integer**	Mandatory
Ort	location	**String**	Mandatory
regionalFactor	Regional type factor value	**Double**	Mandatory
status	The status of the soft delete	**String**	Mandatory

2. Delete Request

Description

The regional factor value based on the postcode.

API Request

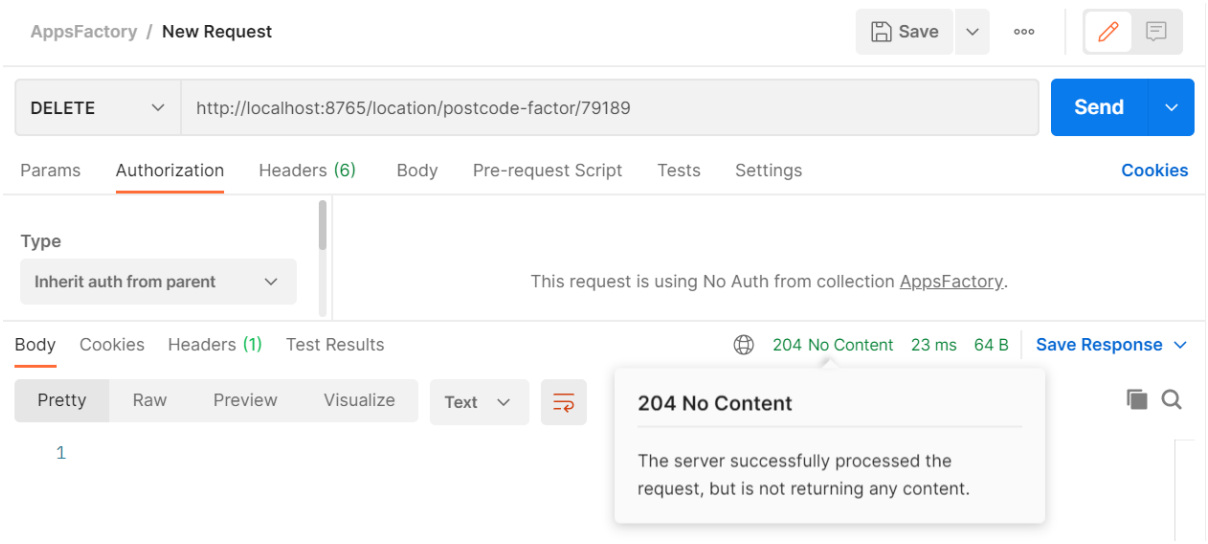
http://localhost:8765/location/postcode-factor/<postcode>

Key	Description	Format	Type
postcode	Location postcode	Integer	Mandatory

Example of Delete Request

http://localhost:8765/location/postcode-factor/79189

Response



3. Add Request

Description

Add the regional factor value based on the postcode.

API Request

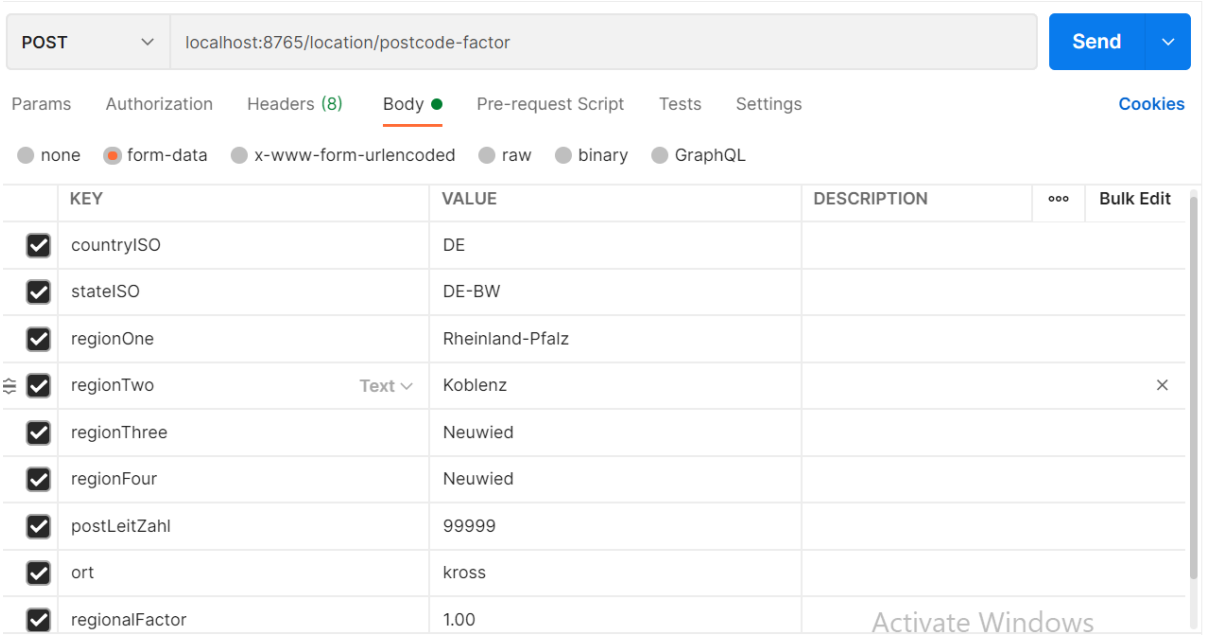
http://localhost:8765/location/postcode-factor

Request Body

Key	Description	Format	Type
countryISO	The Country name in ISO 3166 standards	**String**	Mandatory
stateISO	The State name name in ISO 3166 standards	**String**	Mandatory
regionOne	Region One	**String**	Mandatory
regionTwo	Region Two	**String**	Mandatory
regionThree	Region Three	**String**	Mandatory
regionFour	Region Four	**String**	Mandatory
postLietZahl	The postcode of the location	**Integer**	Mandatory
Ort	location	**String**	Mandatory
regionalFactor	Regional type factor value	**Double**	Mandatory

Example of Add Request

http://localhost:8765/location/postcode-factor



Response


```
{
    "id": 22899,
    "countryISO": "DE",
    "stateISO": "DE-BW",
    "regionOne": "Rheinland-Pfalz",
    "regionTwo": "Koblenz",
    "regionThree": "Neuwied",
    "regionFour": "Neuwied",
    "postLeitZahl": 99999,
    "ort": "kross",
    "regionalFactor": 2.5367129124309713,
    "status": "ACTIVE"
}
```


Key	Description	Format	Type
id	The unique Id	**Integer**	Mandatory
countryISO	The Country name in ISO 3166 standards	**String**	Mandatory
stateISO	The State name name in ISO 3166 standards	**String**	Mandatory
regionOne	Region One	**String**	Mandatory
regionTwo	Region Two	**String**	Mandatory
regionThree	Region Three	**String**	Mandatory
regionFour	Region Four	**String**	Mandatory

postLietZahl	The postcode of the location	**Integer**	Mandatory
Ort	location	**String**	Mandatory
regionalFactor	Regional type factor value	**Double**	Mandatory
status	The status of the soft delete	**String**	Mandatory

4. Update Request

Description

Update regional factor value based on the postcode.

API Request

http://localhost:8765/location/postcode-factor/<postcode>

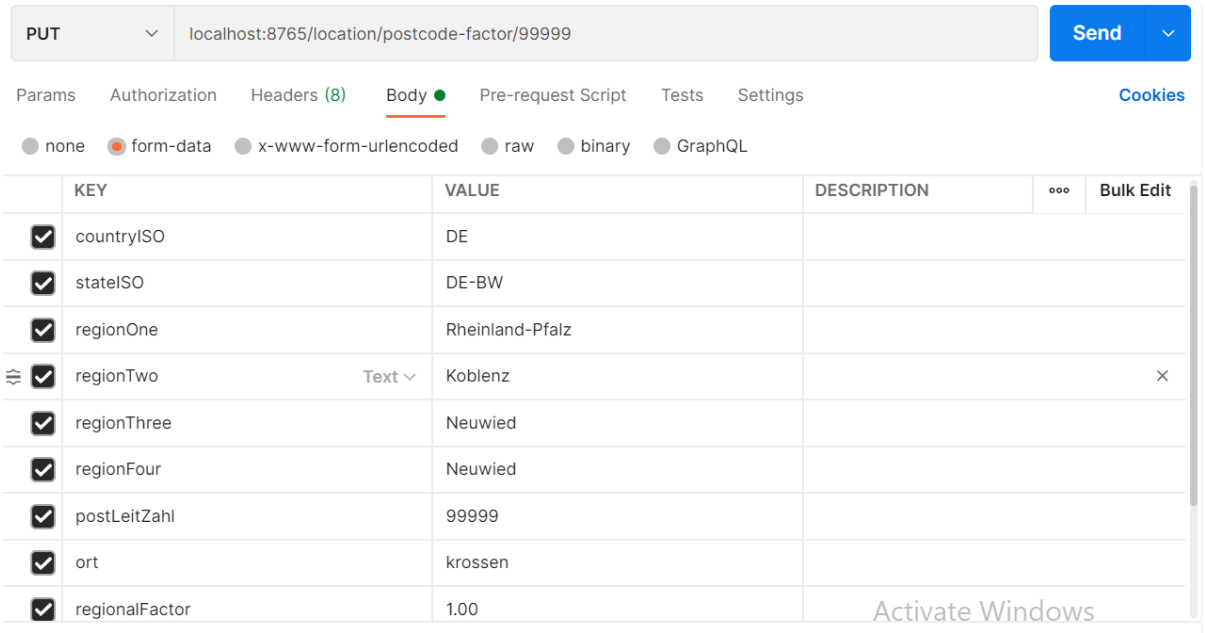
Key	Description	Format	Type
postcode	Location postcode	Integer	Mandatory

Request Body

Key	Description	Format	Type
countryISO	The Country name in ISO 3166 standards	**String**	Mandatory
stateISO	The State name name in ISO 3166 standards	**String**	Mandatory
regionOne	Region One	**String**	Mandatory
regionTwo	Region Two	**String**	Mandatory
regionThree	Region Three	**String**	Mandatory
regionFour	Region Four	**String**	Mandatory
postLietZahl	The postcode of the location	**Integer**	Mandatory
Ort	location	**String**	Mandatory
regionalFactor	Regional type factor value	**Double**	Mandatory

Example of Update Request

http://localhost:8765/location/postcode-factor/99999



Response


```
{
    "id": 22899,
    "countryISO": "DE",
    "stateISO": "DE-BW",
    "regionOne": "Rheinland-Pfalz",
    "regionTwo": "Koblenz",
    "regionThree": "Neuwied",
    "regionFour": "Neuwied",
    "postLeitZahl": 99999,
    "ort": "krossen",
    "regionalFactor": 1.0,
    "status": "ACTIVE"
}
```

Key	Description	Format	Type
id	The unique Id	**Integer**	Mandatory
countryISO	The Country name in ISO 3166 standards	**String**	Mandatory
stateISO	The State name name in ISO 3166 standards	**String**	Mandatory
regionOne	Region One	**String**	Mandatory
regionTwo	Region Two	**String**	Mandatory
regionThree	Region Three	**String**	Mandatory
regionFour	Region Four	**String**	Mandatory
postLietZahl	The postcode of the location	**Integer**	Mandatory
Ort	location	**String**	Mandatory
regionalFactor	Regional type factor value	**Double**	Mandatory
status	The status of the soft delete	**String**	Mandatory

Auto-Services

1. Get Request

Description

The Type Class factor value based on the auto type.

API Request

http://localhost:8765/auto/auto-factor/<auto>

Key	Description	Format	Type
auto	Auto Type	String	Mandatory

Example of Get Request

http://localhost:8765/auto/auto-factor/BMW

Response


```
{
    "id": 1,
    "carName": "BMW",
    "status": "ACTIVE",
    "factor": 1.2
}
```


Key	Description	Format	Type
id	The unique Id	**Integer**	Mandatory
carName	The auto type	**String**	Mandatory
factor	The Type class factor	**Double**	Mandatory
status	The status of the soft delete	**String**	Mandatory

2. *Delete Request*

Description

The regional factor value based on the postcode.

API Request

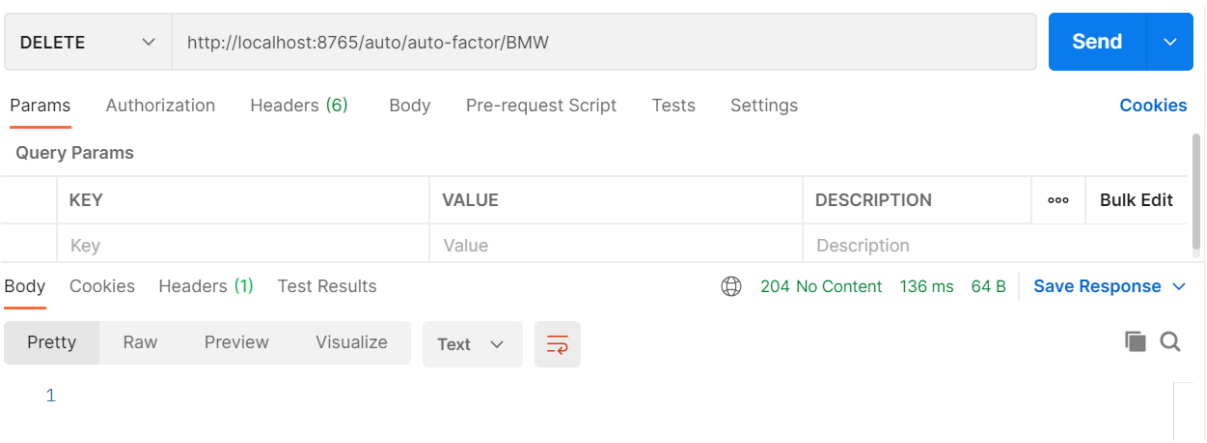
http://localhost:8765/auto/auto-factor/<auto>

Key	Description	Format	Type
auto	Auto Type	String	Mandatory

Example of Delete Request

http://localhost:8765/auto/auto-factor/BMW

Response



Mileage-Services

1. *Get Request*

Description

The mileage factor value based on the number of mileages driven by Auto.

API Request

http://localhost:8765/mileage/mileage-factor/<mileage>

Key	Description	Format	Type
mileage	The number of miles driven by the car.	Integer	Mandatory

Example of Get Request

http://localhost:8765/mileage/mileage-factor/100

Response


```
{
    "id": 1,
    "minMileage": 0,
    "maxMileage": 5000,
    "factor": 0.5,
    "status": "ACTIVE"
}
```


Key	Description	Format	Type
id	The unique Id	**Integer**	Mandatory
minMileage	The minimum mileage range for the same mileage factor	**Integer**	Mandatory
maxMileage	The maximum mileage range for the same mileage factor	**Integer**	Mandatory
factor	The mileage factor	**Double**	Mandatory
status	The status of the soft delete	**String**	Mandatory

2. Delete Request

Description

The mileage factor value based on the range of the mileages.

API Request

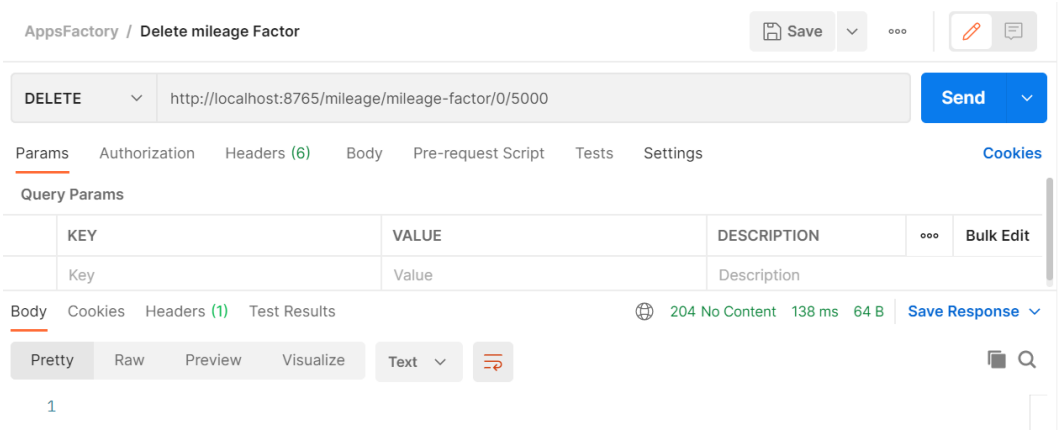
http://localhost:8765/mileage/mileage-factor/<minValue>/<maxValue>

Key	Description	Format	Type
minValue	The minimum value for the range factor	Integer	Mandatory
maxValue	The maximum value for the range factor	Integer	Mandatory

Example of Delete Request

http://localhost:8765/mileage/mileage-factor/0/5000

Response



Premium-Insurance

1. Get Request

Description

The Annual Insurance Value request to get the value of the premium insurance based on location (postcode), the mileage of the car (mileage) and the car type (auto).

API Request

http://localhost:8765/insurance/insurance-calculator/<postcode>/<mileage>/<auto>

Key	Description	Format	Type
postcode	Location postcode	Integer	Mandatory
mileage	The number of mileage driven by car	Integer	Mandatory
auto	Car type	Integer	Mandatory

Example of Get Request

http://localhost:8765/insurance/insurance-calculator/79189/100/BMW

Response

{

- **uuid**: "6eed5109-9631-4e2e-a98c-31d5b6d0db8c",
- **countryISO**: "DE",
- **location**: "Bad Krozingen",

- **postcode**: 79189,
- **regionalFactor**: 1.8032957213724221,
- **autoType**: "BMW",
- **autoTypeFactor**: 1.2,
- **autoMileage**: 100,
- **mileageMinimumValue**: 0,
- **mileageMaximumValue**: 5000,
- **autoMileageFactor**: 0.5,
- **currency**: "Euro",
- **annualPremiumInsurance**: 1.08

}

Key	Description	Format	Type
uuid	The unique transaction Id	**Uuid**	Mandatory
countryISO	The country name where the postcode belongs	**String**	Mandatory
location	The name of the location where postcode belongs	**String**	Mandatory
Postcode	The postcode of location	**Integer**	Mandatory
regionalFactor	The regional factor	**Double**	Mandatory
autotype	The auto type	**String**	Mandatory
autoTypeFactor	The type factor	**Double**	Mandatory
autoMileage	The range of auto mileage	**Integer**	Mandatory
mileageMinimumValue	Minimum value of the range mileage	**Integer**	Mandatory
mileageMaximumValue	Maximum value of the range mileage	**Integer**	Mandatory
autoMileageFactor	Mileage Factor	**Double**	Mandatory
Currency	Type of Currency	**String**	Mandatory
annualPremiumInsurance	***The annual premium insurance value calculated based on the parameters***	**Double**	Mandatory