



**Nom et Prénom : AYOUIJIL Soukayna**

**BDCC3 – Ingénierie Informatique, Big Data et Cloud Computing**

**Compte Rendu – Examen Systèmes Distribués**

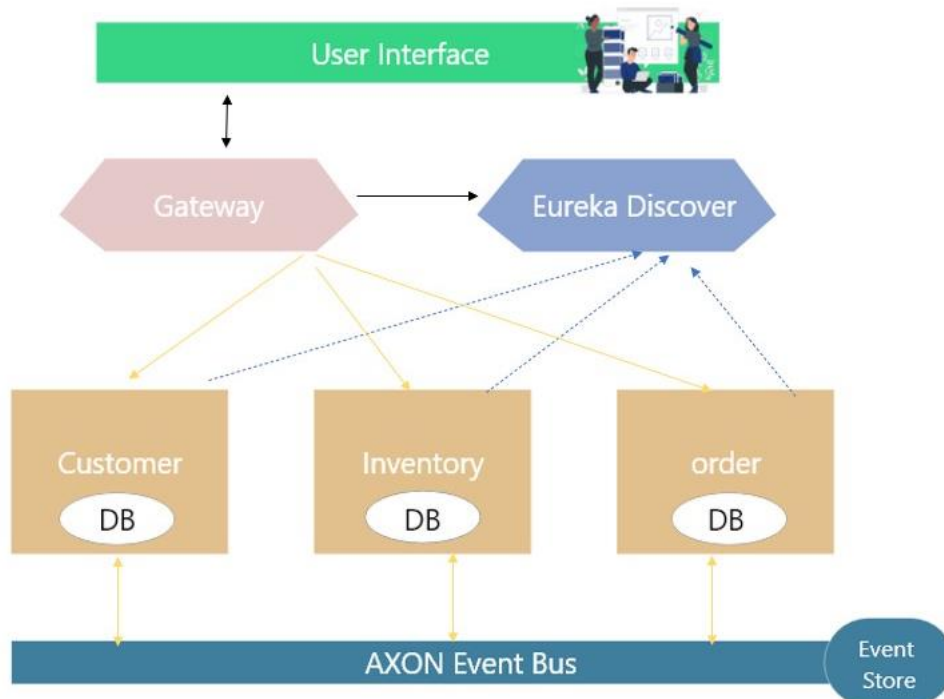


## 1. Introduction :

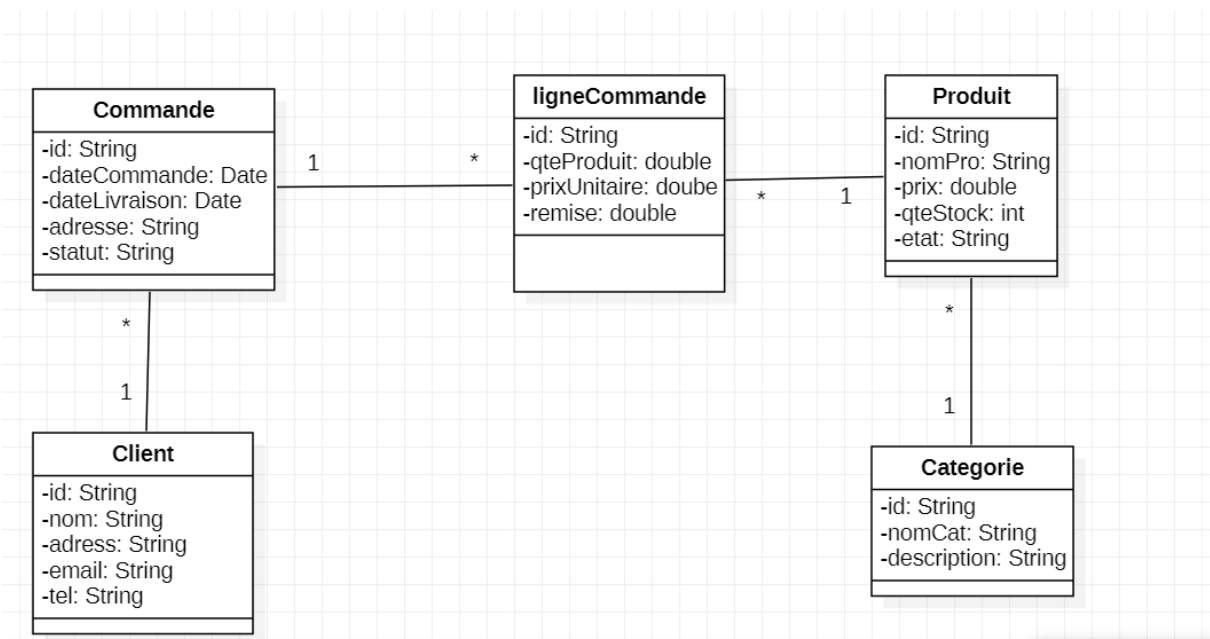
On souhaite créer un système distribué basé sur les micro-services en utilisant une architecture pilotée par les événements respectant les deux patterns Event Sourcing et CQRS. Cette application devrait permettre de gérer des commandes de produits appartenant à des clients.

## 2. Établir une architecture technique du projet

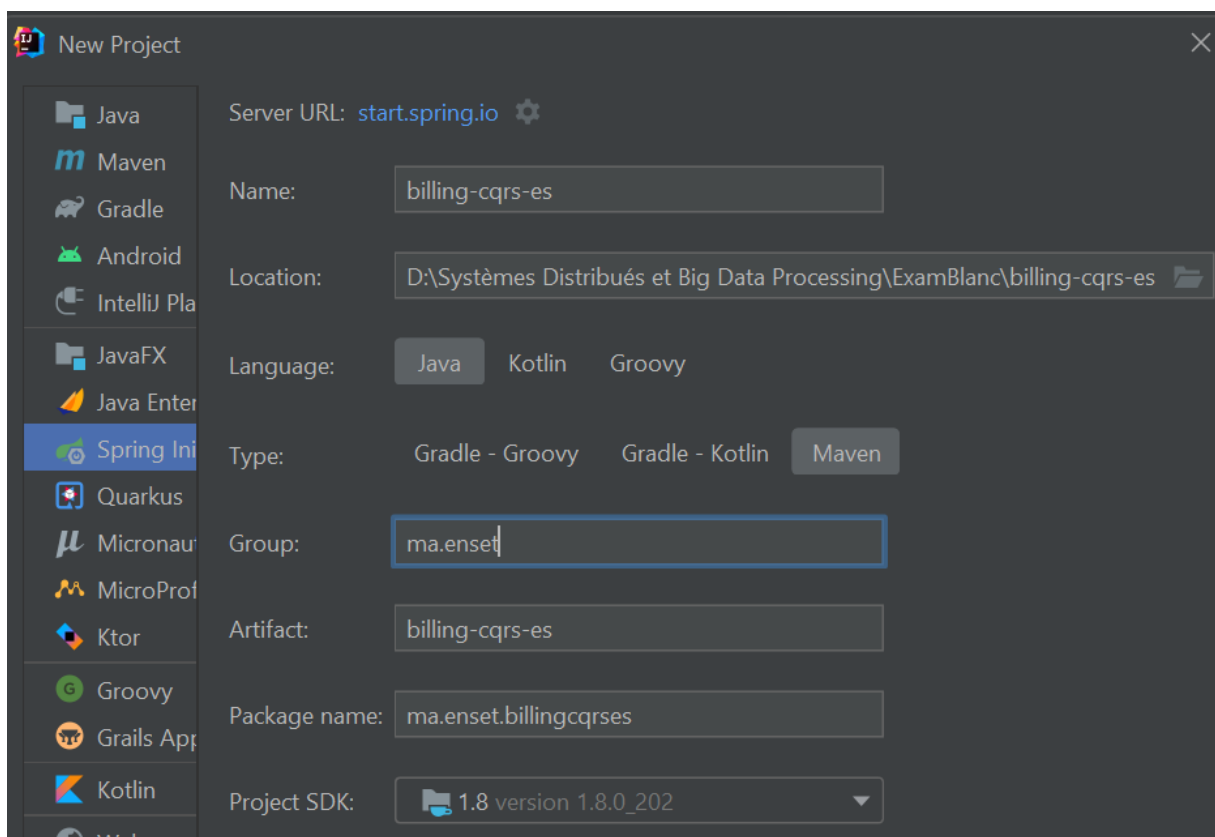
Architecture technique du projet

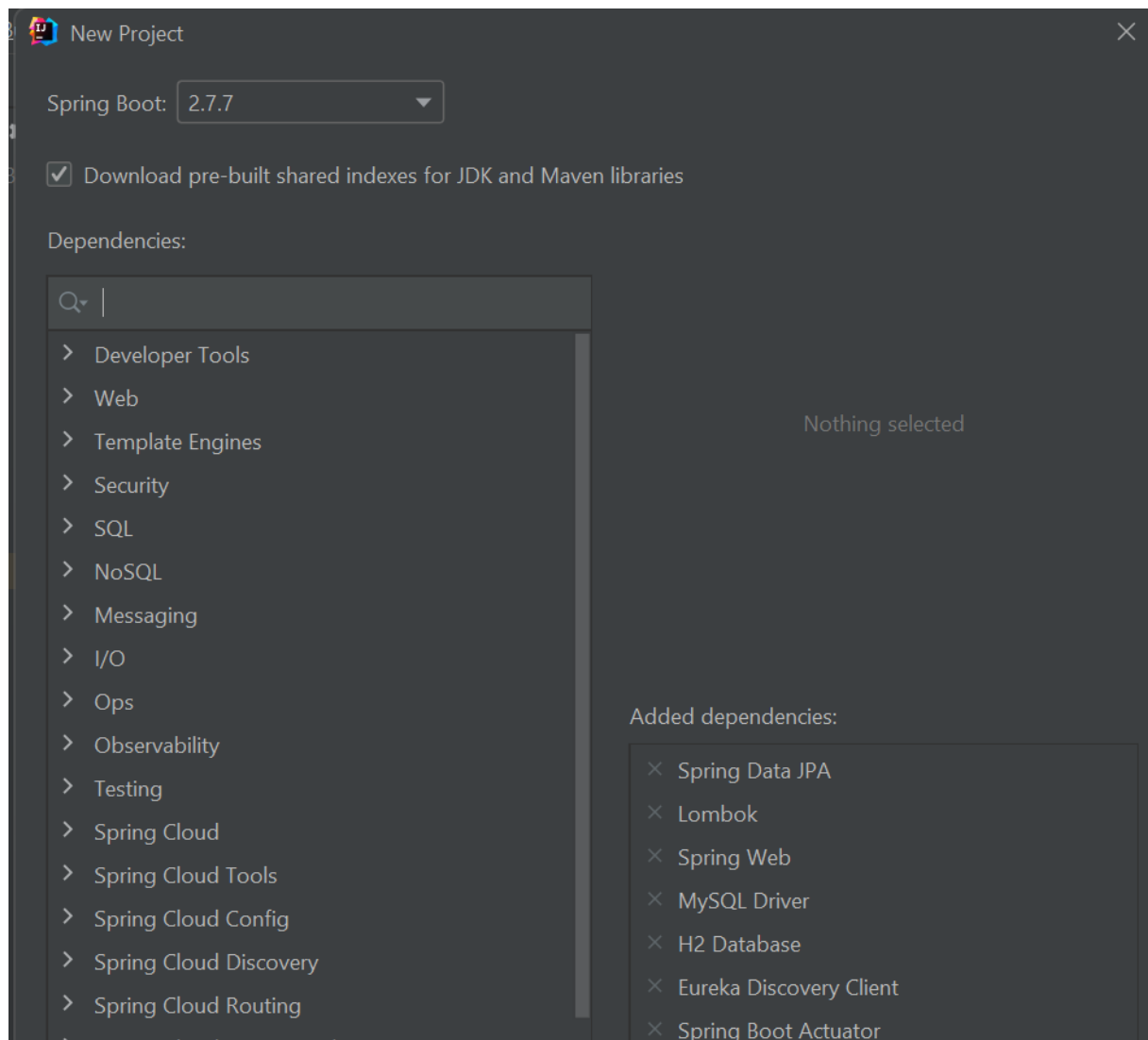


### 3. Établir un diagramme de classe global du projet



### 4. Déployer le serveur AXON Server





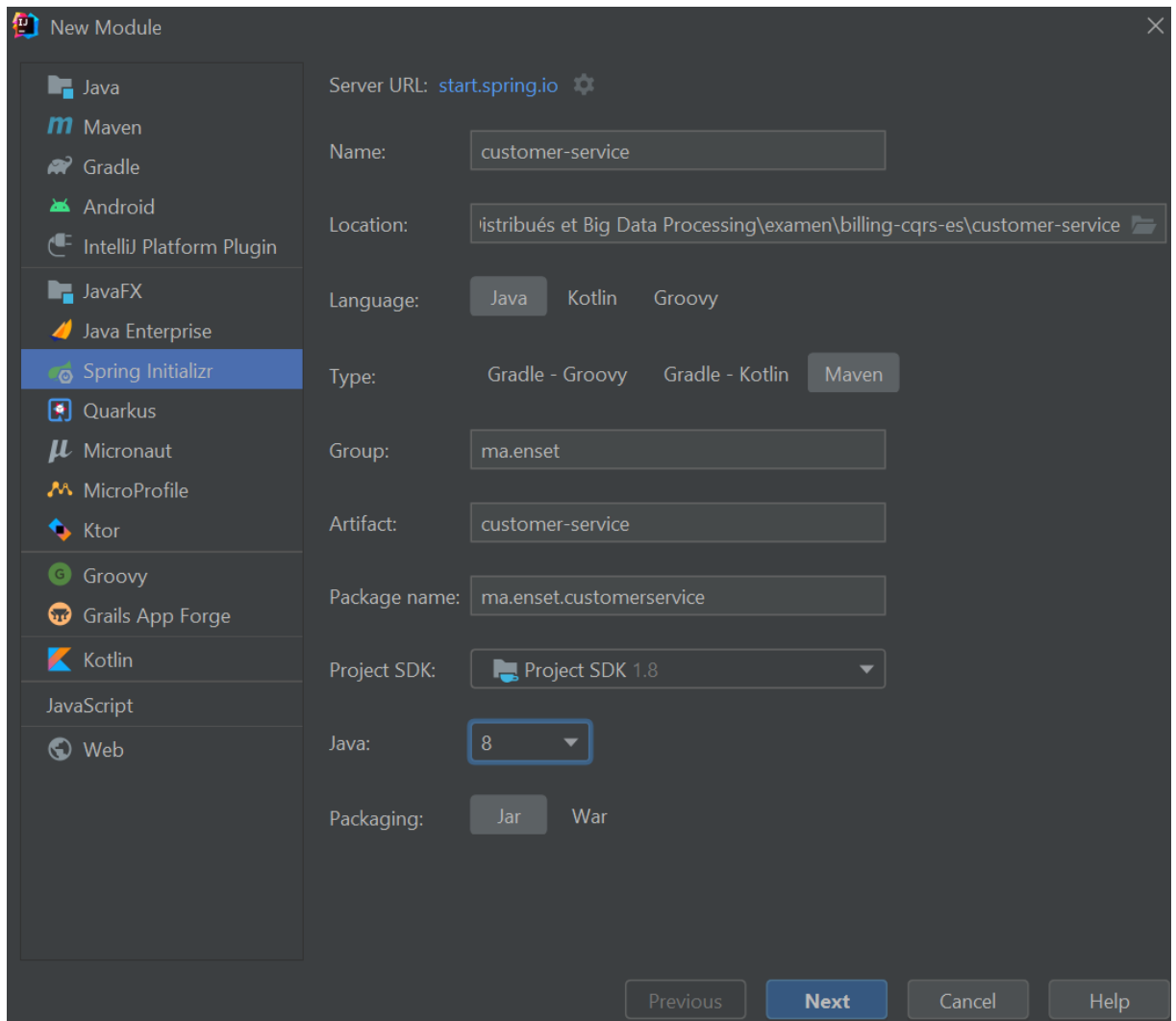
➤ Ajouter la dépendance suivante :

```
<dependency>
  <groupId>org.axonframework</groupId>
  <artifactId>axon-spring-boot-starter</artifactId>
  <version>4.6.1</version>
  <exclusions>
    <exclusion>
      <groupId>org.axonframework</groupId>
      <artifactId>axon-server-connector</artifactId>
    </exclusion>
  </exclusions>
</dependency>
```

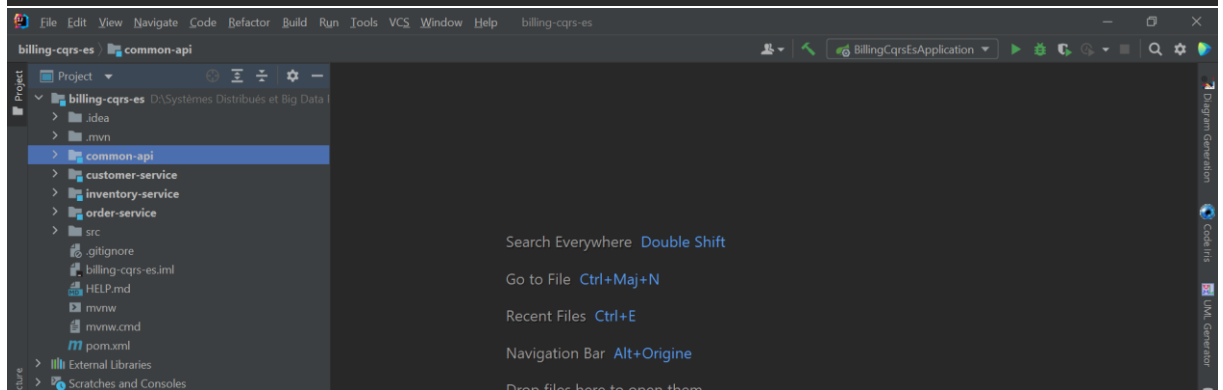
➤ Ajouter ces deux suivantes à pom.xml:

```
<packaging>pom</packaging>
<modules></modules>
```

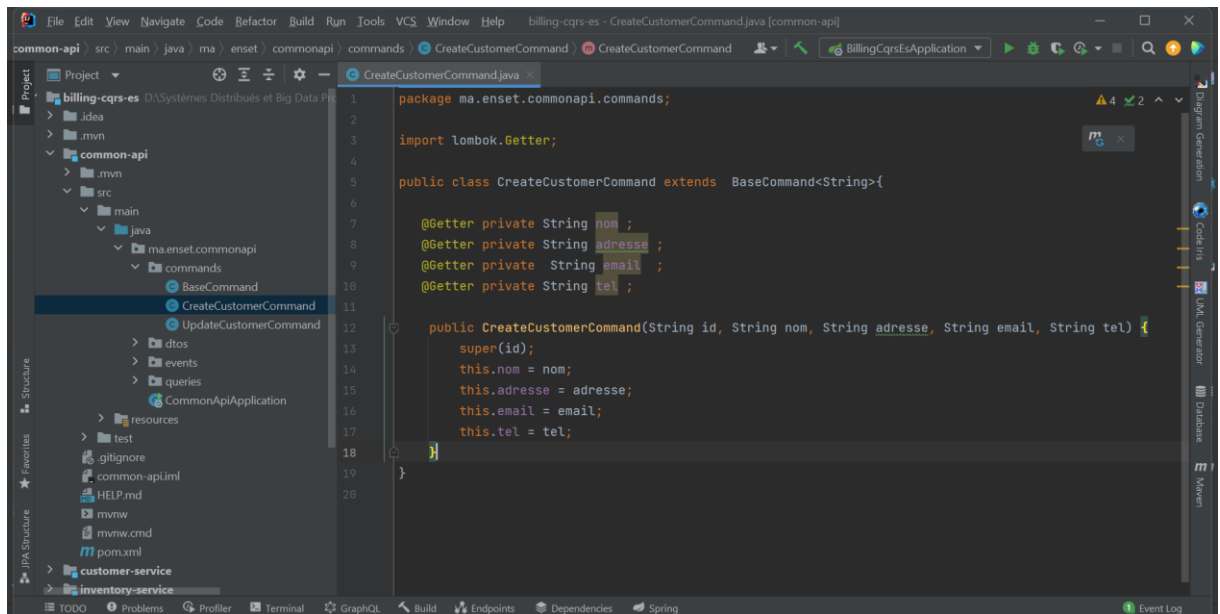
Maintenant puisque on a créé le serveur AXON , nous allons mettre en œuvre les modules qui constitue le projet



```
<parent>
  <artifactId>billing-cqrs-es</artifactId>
  <groupId>ma.enset</groupId>
  <version>0.0.1-SNAPSHOT</version>
</parent>
<packaging>pom</packaging>
<modules>
  <module>customer-service</module>
  <module>common-api</module>
  <module>inventory-service</module>
  <module>order-service</module>
</modules>
```



## 5. Développer le micro-service Customer-Service



The screenshot shows the IntelliJ IDEA IDE with the 'common-api' module selected in the Project view. The 'CreateCustomerCommand.java' file is open in the editor. The code defines a class that extends 'BaseCommand<String>' and implements the 'CreateCustomerCommand' interface. It includes getters for 'nom', 'adresse', 'email', and 'tel', and a constructor that initializes these fields.

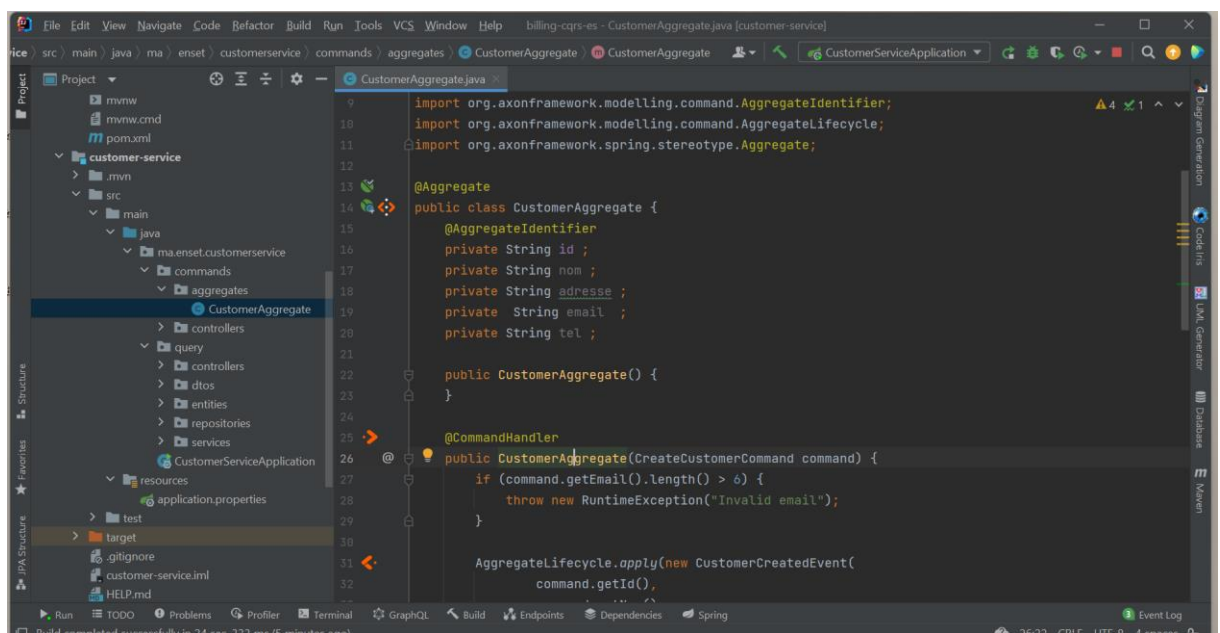
```
package ma.enset.commonapi.commands;

import lombok.Getter;

public class CreateCustomerCommand extends BaseCommand<String>{

    @Getter private String nom ;
    @Getter private String adresse ;
    @Getter private String email ;
    @Getter private String tel ;

    public CreateCustomerCommand(String id, String nom, String adresse, String email, String tel) {
        super(id);
        this.nom = nom;
        this.adresse = adresse;
        this.email = email;
        this.tel = tel;
    }
}
```



The screenshot shows the IntelliJ IDEA IDE with the 'customer-service' module selected in the Project view. The 'CustomerAggregate.java' file is open in the editor. The code defines a class that implements the 'Aggregate' interface. It includes private fields for 'id', 'nom', 'adresse', 'email', and 'tel', and a constructor. It also implements the 'CommandHandler' interface, with a 'handle' method that checks the email length and throws an exception if it's invalid. Finally, it applies the 'CustomerCreatedEvent' to the aggregate lifecycle.

```
import org.axonframework.modelling.command.AggregateIdentifier;
import org.axonframework.modelling.command.AggregateLifecycle;
import org.axonframework.spring.stereotype.Aggregate;

@Aggregate
public class CustomerAggregate {
    @AggregateIdentifier
    private String id ;
    private String nom ;
    private String adresse ;
    private String email ;
    private String tel ;

    public CustomerAggregate() {
    }

    @CommandHandler
    public CustomerAggregate(CreateCustomerCommand command) {
        if (command.getEmail().length() > 6) {
            throw new RuntimeException("Invalid email");
        }

        AggregateLifecycle.apply(new CustomerCreatedEvent(
            command.getId(),

```

phpMyAdmin

Récents Préférés

Taper pour filtrer cet, Entrée pour tout rechercher

Nouvelle base de données

- annuaireesto
- ayoujil
- bank
- blog
- bookstore
- boujdi\_bd
- boutique
- conferences\_db
- curd
- customer-db
  - Nouvelle table
  - association\_value\_entry
  - customer
  - dead\_letter\_entry
  - domain\_event\_entry
  - hibernate\_sequence
  - saga\_entry
  - snapshot\_event\_entry
  - token\_entry
- db
- dbp

Serveur: 127.0.0.1 » Base de données: customer-db » Table: token\_entry

Parcourir Structure SQL Rechercher Insérer Exporter Importer Privileges Plus




Affichage des lignes 0 - 0 (total de 1, traitement en 0,0000 seconde(s).)




SELECT \* FROM "token\_entry"

Profilage [Éditer en ligne] [Éditer] [Expliquer SQL] [Créer le code source PHP] [Actualiser]

Tout afficher Nombre de lignes : 25 Filtrer les lignes : Chercher dans cette table

Options

	processor_name	segment	owner	timestamp	token	token
<input type="checkbox"/>	   ma.enset.customerservice.query.services	0	20496@DESKTOP-E611US0	2022-12-26T09:37:14.122Z	NULL	NULL

Tout cocher Avec la sélection :    Exporter

Tout afficher Nombre de lignes : 25 Filtrer les lignes : Chercher dans cette table

Opérations sur les résultats de la requête

Imprimer Copier dans le presse-papiers Exporter Afficher le graphique Créer une vue

Conserver cette requête SQL dans les signets

Intitulé :  ☐ Signet visible pour les autres utilisateurs

Console de requêtes SQL

Home Workspaces API Network Explore

Search Postman

Invite Upgrade

api/cu POST http GET http GET http GET http GET http POST http POST http GET http POST http

Save

http://localhost:7081/customer/commands/createCustomer

POST http://localhost:7081/customer/commands/createCustomer

Send

Params Authorization Headers (10) Body Pre-request Script Tests Settings

none form-data x-www-form-urlencoded raw binary GraphQL JSON

```
1 {
2   "nom": "SOUKAYNA",
3   "adresse": "MIDELT",
4   "email": "soukaynaayoujjil@gmail.com",
5   "tel": "0777659816"
6 }
```

Body Cookies Headers (8) Test Results

Status: 200 OK Time: 289 ms Size: 289 B Save Response

Pretty Raw Preview Visualize Text

```
1 978c14a9-db23-4503-838d-c0d2f5fe5ed4
```

Online Find and Replace Console Cookies Capture requests Runner Trash

Home Workspaces API Network Explore Search Postman Invite Upgrade

api/cu: POST http GET http GET http GET Untitled GET Untitled POST http POST http GET Untitled PUT http

http://localhost:7081/customer/commands/updateCustomer Save

PUT http://localhost:7081/customer/commands/updateCustomer Send

Params Authorization Headers (10) Body Pre-request Script Tests Settings Cookies Beautify

none form-data x-www-form-urlencoded raw binary GraphQL JSON

```
1 {
2   ... "id": "978c14a9-db23-4583-838d-c9d2f5fe5ed4",
3   ... "nom": "SOUKAYNA",
4   ... "adresse": "MIDELT",
5   ... "email": "soukaynaayoujjil34@gmail.com",
6   ... "tel": "0777659816"
7 }
```

Body Cookies Headers (7) Test Results Status: 200 OK Time: 40 ms Size: 212 B Save Response

Pretty Raw Preview Visualize Text

1

Online Find and Replace Console Cookies Capture requests Runner Trash

Home Workspaces API Network Explore Search Postman Invite Upgrade

api/cu: POST http GET http GET http GET Untitled GET Untitled POST http POST http GET Untitled GET http

http://localhost:7081/customer/queries/all Save

GET http://localhost:7081/customer/queries/all Send

Params Authorization Headers (10) Body Pre-request Script Tests Settings Cookies Beautify

none form-data x-www-form-urlencoded raw binary GraphQL JSON

```
1 {
2   ... "id": "978c14a9-db23-4583-838d-c9d2f5fe5ed4",
3   ... "nom": "SOUKAYNA",
4   ... "adresse": "MIDELT",
5   ... "email": "soukaynaayoujjil34@gmail.com",
6   ... "tel": "0777659816"
7 }
```

Body Cookies Headers (8) Test Results Status: 200 OK Time: 80 ms Size: 394 B Save Response

Pretty Raw Preview Visualize JSON

```
1 {
2   "id": "978c14a9-db23-4583-838d-c9d2f5fe5ed4",
3   "nom": "SOUKAYNA",
4   "adresse": "MIDELT",
5   "email": "soukaynaayoujjil34@gmail.com",
6   "tel": "0777659816"
7 }
```

Online Find and Replace Console Cookies Capture requests Runner Trash





```
import java.util.stream.Stream;

@RestController
@RequestMapping("/categorie/commands")
@AllArgsConstructor
@CrossOrigin("*")
public class CategorieCommandController {
    private CommandGateway commandGateway;
    private EventStore eventStore;

    @PostMapping("/create")
    public CompletableFuture<String> createProprietaire(@RequestBody CreateCategorieRequestDTO request) {
        return commandGateway.send(new CreateCategorieCommand(
            UUID.randomUUID().toString(),
            request.getNom(),
            request.getDescription()
        ));
    }

    @PutMapping("/update")
    public CompletableFuture<String> updateProprietaire(@RequestBody UpdateCategorieRequestDTO request) {
        return commandGateway.send(new UpdateCategorieCommand(
            request.getId(),
            request.getNom(),
            request.getDescription()
        ));
    }
}
```

phpMyAdmin

Récentes Préférées

Taper pour filtrer ceci. Entrée pour tout rechercher

information\_schema  
information\_db  
inventory-db  
Nouvelle table  
association\_value\_entry  
dead\_letter\_entry  
domain\_event\_entry  
hibernate\_sequence  
saga\_entry  
snapshot\_event\_entry  
token\_entry  
java  
mysql  
online\_book\_store\_db  
patients\_db  
performance\_schema  
phpmyadmin  
radar-db  
radar\_service  
smsenderdb  
snrt  
test

Seigneur: 127.0.0.1 » Base de données: inventory-db » Table: token\_entry

Parcourir Structure SQL Rechercher Insérer Exporter Importer Privilèges Plus

MySQL a retourné un résultat vide (c'est à dire aucune ligne). (traitement en 0,0000 seconde(s).)

SELECT \* FROM `token\_entry`

Profilage [Éditer en ligne] [Éditer] [Expliquer SQL] [Créer le code source PHP] [Actualiser]

processor_name	segment	owner	timestamp	token	token_type
----------------	---------	-------	-----------	-------	------------

Opérations sur les résultats de la requête

Créer une vue

Conserver cette requête SQL dans les signets

Intitulé:  ☐ Signet visible pour les autres utilisateurs

Conserver cette requête SQL dans les signets

Console de requêtes SQL

Home Workspaces API Network Explore Search Postman Invite Upgrade

< GET http POST http GET http GET http GET Untitled GET Untitled POST http POST http GET Untitled POST http > + No Environment

http://localhost:7082/categorie/commands/create Save

POST http://localhost:7082/categorie/commands/create Send

Params Authorization Headers (10) Body Pre-request Script Tests Settings Cookies Beautify

none form-data x-www-form-urlencoded raw binary GraphQL JSON

```
1 {
2   "nom": "cat1",
3   "description": "cat1"
4 }
```

Body Cookies Headers (8) Test Results Status: 200 OK Time: 579 ms Size: 289 B Save Response

Pretty Raw Preview Visualize Text

```
1 e0cb251a-e795-43b2-a570-d5fde2da12a2
```

Home Workspaces API Network Explore Search Postman Invite Upgrade

< GET http POST http GET http GET http GET Untitled GET Untitled POST http POST http GET Untitled PUT http > + No Environment

http://localhost:7082/categorie/commands/update Save

PUT http://localhost:7082/categorie/commands/update Send

Params Authorization Headers (10) Body Pre-request Script Tests Settings Cookies Beautify

none form-data x-www-form-urlencoded raw binary GraphQL JSON

```
1 {
2   "id": "acf71cca-fb65-48ca-abc1-33694a3ffe7f",
3   "nom": "cat2",
4   "description": "cat2-2"
5 }
```

Body Cookies Headers (7) Test Results Status: 200 OK Time: 301 ms Size: 212 B Save Response

Pretty Raw Preview Visualize Text

```
1
```

Home Workspaces API Network Explore Search Postman Invite Upgrade

< GET http POST http GET http GET http GET Untitled GET Untitled POST http POST http GET Untitled GET http > + No Environment

http://localhost:7082/categorie/queries/all Save

GET http://localhost:7082/categorie/queries/all Send

Params Authorization Headers (10) Body Pre-request Script Tests Settings Cookies Beautify

none form-data x-www-form-urlencoded raw binary GraphQL JSON

```
1 {
2   "nom": "cat2",
3   "description": "cat2-2"
4 }
```

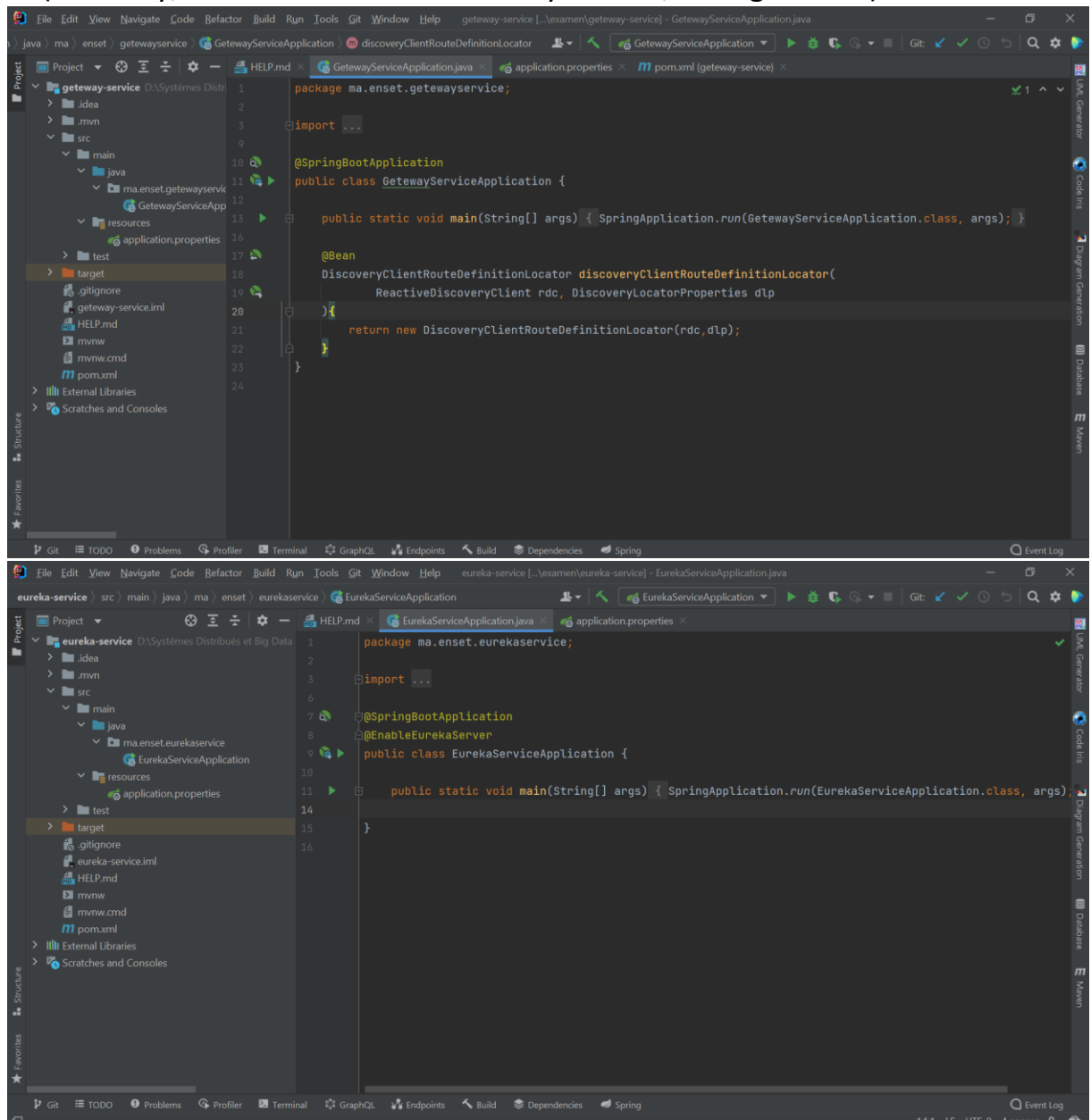
Body Cookies Headers (8) Test Results Status: 200 OK Time: 129 ms Size: 336 B Save Response

Pretty Raw Preview Visualize JSON

```
1 {
2   "id": "85a391ca-b0ef-4b39-9325-63fd376ab953",
3   "description": "cat2-2",
4   "nom": "cat2"
5 }
6
7
```

Online Find and Replace Console Cookies Capture requests Runner Trash

## 7. Mettre en place les services techniques de l'architecture micro-service (Gateway, Eureka ou Consul Discovery service, Config Service)



## 8. Sécuriser votre système avec un système de d'authentification OAuth2, OIDC avec Keycloak ou un service d'authentification basé sur Spring Security et JWT

