



Architecture and framework web

Création d'une application web CRUD
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Sources des données

Fichiers sources provenant de Tours open data (<https://data.tours-metropole.fr/pages/home/>):




- <https://data.tours-metropole.fr/explore/dataset/aire-de-jeux-tours-metropole-val-de-loire/table/>
- <https://data.tours-metropole.fr/explore/dataset/boites-a-livre-tours-metropole-val-de-loire/table/>
- <https://data.tours-metropole.fr/explore/dataset/composteurs-partages-tours-metropole-val-de-loire/table/?disjunctive.ville>
- https://data.tours-metropole.fr/explore/dataset/stationnement-pmr-tmvl/table/?disjunctive.commune&disjunctive.nb_place
- <https://data.tours-metropole.fr/explore/dataset/terrain-de-petanque-tmvl/table/>
- <https://data.tours-metropole.fr/explore/dataset/stationnement-velo-tours-metropole/table/?disjunctive.abri>
- <https://data.tours-metropole.fr/explore/dataset/velocistes-tours-metropole/table/>



Scripts de création des bases

Les scripts de création et de peuplement des bases de données se trouvent sur git :

- <https://gitlab.com/architecture-and-framework-web-db/>

Nom
 README.md
 petanque_jdd.sql
 petanque_structure.sql



A

architecture and framework web db

Sous-groupes et projets

Projets partagés

Inactif

Recherche (3 caractères minimum)

A

Aire de jeux

B

boite à livres

C

composteur

P

pmr

T

Terrain de pétanque

V

Velo

V

Velociste



Création de base de données

Pour créer la base de données :

- Ouvrir un terminal à l'endroit où est installé MariaDB
- Connectez-vous à MariaDB : `mariadb.exe -u root`
- Créer une base de données : `CREATE DATABASE exemple;`

```
C:\Program Files\MariaDB 11.5\bin
./mariadb.exe -u root
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 68
Server version: 11.5.2-MariaDB mariadb.org binary distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> CREATE DATABASE exemple;
Query OK, 1 row affected (0.004 sec)

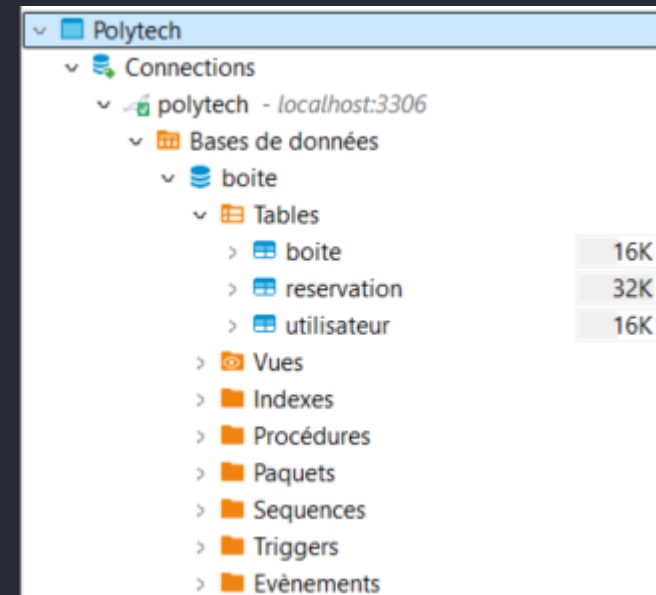
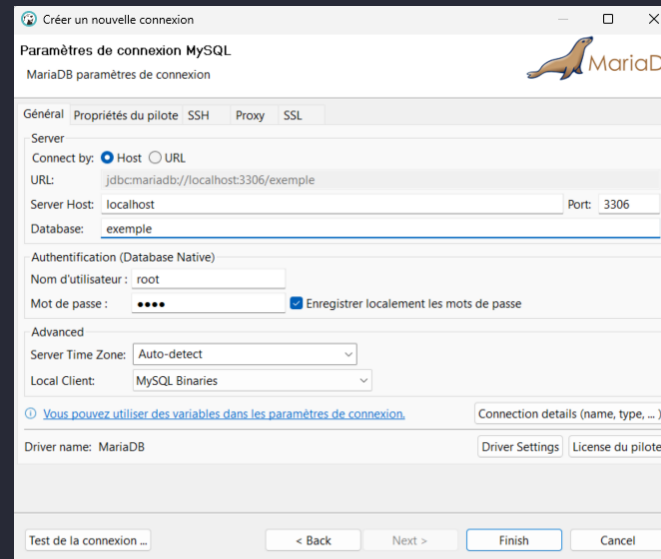
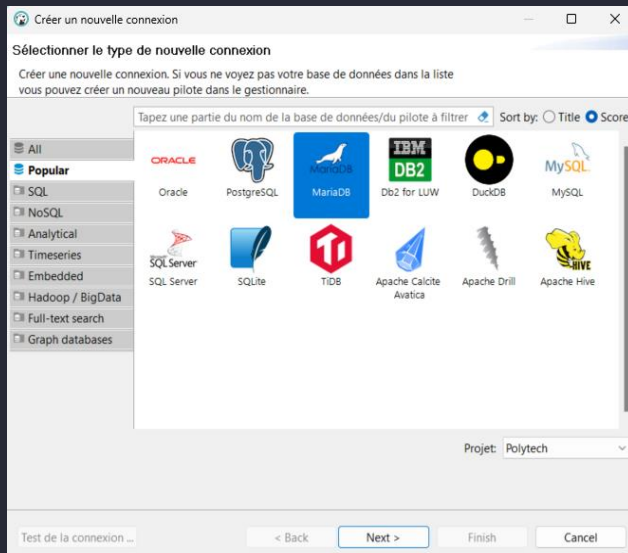
MariaDB [(none)]>
```



Création de la base de données

Créer une connexion sur Dbeaver vers la base de données créée via Mariadb :

Jouer le script de création de la structure et d'insertion des données






Initialisation du projet

<https://start.spring.io/#!type=maven-project&language=java&platformVersion=3.3.4&packaging=jar&jvmVersion=17&groupId=com.example&artifactId=demo&name=demo&description=Demo%20project%20for%20Spring%20Boot&packageName=com.example.demo&dependencies=web,lombok,data-jpa,security,mariadb>





Project

☐ Gradle - Groovy ☐ Gradle - Kotlin ☒ **Maven**

Language

☒ **Java** ☐ Kotlin ☐ Groovy

Spring Boot

☐ 3.4.0 (SNAPSHOT) ☐ 3.4.0 (M3) ☐ 3.3.5 (SNAPSHOT) ☒ **3.3.4** ☐ 3.2.11 (SNAPSHOT) ☐ 3.2.10

Project Metadata

Group

com.capgemini

Artifact

polytech

Name

polytech

Description

Projet Polytech

Package name

com.capgemini.polytech

Packaging

☒ **Jar** ☐ War

Java

☐ 23 ☒ **21** ☐ 17

Dependencies

Spring Web **WEB**

Build web, including RESTful, applications using Spring MVC. Uses Apache Tomcat as the default embedded container.

Lombok **DEVELOPER TOOLS**

Java annotation library which helps to reduce boilerplate code.

Spring Data JPA **SQL**

Persist data in SQL stores with Java Persistence API using Spring Data and Hibernate.

Spring Security **SECURITY**

Highly customizable authentication and access-control framework for Spring applications.

ADD DEPENDENCIES... CTRL + B



Configuration projet

Dans le fichier `src/main/resources/application.yml` il faut configurer la connexion à la base de données:

- `spring.datasource.url` : Lien vers la base de données
- `spring.datasource.username`: nom de l'utilisateur de la base de données
- `spring.datasource.password` : mdp de l'utilisateur de la base de données
- `spring.datasource.driver-class-name`: driver correspondant au type de SGBD utilisé



```
1 <dependency>
2   <groupId>org.mariadb.jdbc</groupId>
3   <artifactId>mariadb-java-client</artifactId>
4   <version>3.3.3</version>
5 </dependency>
```

```
---
spring:
  application:
    name: opendata-crud
  datasource:
    url: jdbc:mariadb://localhost:3306/polytech
    username: root
    password: mypass
    driver-class-name: org.mariadb.jdbc.Driver
```





Entités et lombok

<https://projectlombok.org/features/>

```
1  import jakarta.persistence.*;
2  import lombok.*;
3
4
5
6  @Entity
7  @Builder
8  @Getter
9  @AllArgsConstructor(access = AccessLevel.PRIVATE)
10 @NoArgsConstructor
11 @ToString
12 @Table(name="tree")
13 public class TreeEntity {
14
15     @Id
16     @GeneratedValue(strategy = GenerationType.IDENTITY)
17     private Integer id;
18
19     @NonNull
20     private String genre;
21
22     @NonNull
23     private String espece;
24
25     @NonNull
26     private String geoPoint;
27
28     @NonNull
29     private Integer capacity;
30
31 }
32
```




DTO et Mapstruct

```
1
2
3 import lombok.*;
4
5
6 @Builder
7 @Getter
8 @Setter
9 @AllArgsConstructor(access = AccessLevel.PRIVATE)
10 @NoArgsConstructor
11 @ToString
12 @EqualsAndHashCode
13 public class TreeDTO {
14
15     private Integer id;
16     private String genre;
17     private String espece;
18     private String geoPoint;
19     private Integer capacity;
20 }
```

```
1
2 import com.cours.opendata_crud.dto.TreeDTO;
3 import com.cours.opendata_crud.entity.TreeEntity;
4 import org.mapstruct.Mapper;
5
6
7 @Mapper(componentModel = "spring")
8 public interface TreeMapper {
9
10     TreeDTO toDTO(TreeEntity treeEntity);
11
12
13     TreeEntity toEntity(TreeDTO treeDTO);
14 }
15
```



Configuration mapstruct

Ajouter la configuration mapstruct de dans le fichier pom.xml:

```
1 <build>
2   <plugins>
3     <plugin>
4       <groupId>org.springframework.boot</groupId>
5       <artifactId>spring-boot-maven-plugin</artifactId>
6     </plugin>
7     <plugin>
8       <groupId>org.apache.maven.plugins</groupId>
9       <artifactId>maven-compiler-plugin</artifactId>
10      <version>3.11.0</version>
11      <configuration>
12        <annotationProcessorPaths>
13          <path>
14            <groupId>org.mapstruct</groupId>
15            <artifactId>mapstruct-processor</artifactId>
16            <version>1.5.5.Final</version>
17          </path>
18
19          <path>
20            <groupId>org.projectlombok</groupId>
21            <artifactId>lombok</artifactId>
22            <version>1.18.34</version>
23          </path>
24
25          <!-- This is needed when using Lombok 1.18.16 and above -->
26          <path>
27            <groupId>org.projectlombok</groupId>
28            <artifactId>lombok-mapstruct-binding</artifactId>
29            <version>0.2.0</version>
30          </path>
31        </annotationProcessorPaths>
32      </configuration>
33    </plugin>
34  </plugins>
35 </build>
```



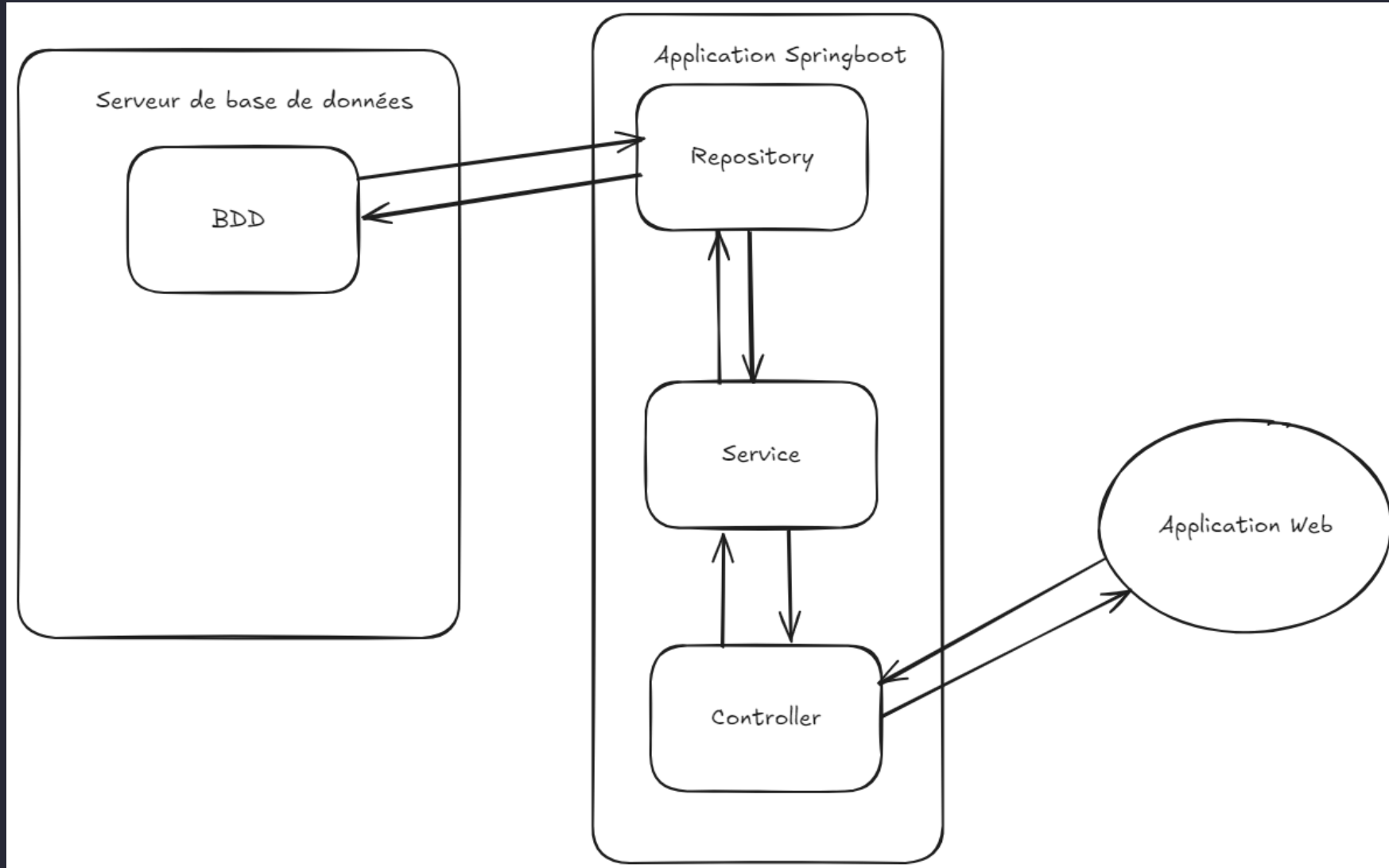
Correction TP1

Code : <https://gitlab.com/architecture-and-framework-web-db/application-crud-spring-back>

Branche : tp1



Architecture du projet





JPA Repository

Créer le @Repository Spring Data correspondant à l'entité choisie



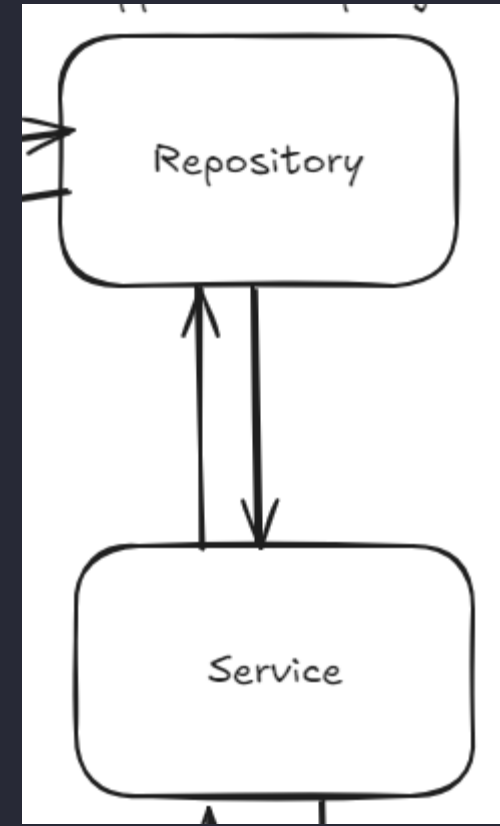
```
1
2 import com.cours.opendata_crud.entity.TreeEntity;
3 import org.springframework.data.jpa.repository.JpaRepository;
4 import org.springframework.stereotype.Repository;
5
6 @Repository
7 public interface TreeRepository extends JpaRepository<TreeEntity, Integer> {
8 }
9
```



Service

Créer un @Service Spring permettant d'effectuer les opérations CRUD sur le repository :

- Création
- Récupération unitaire
- Récupération par liste
- Mise à jour
- Suppression
- Le service se charge d'appeler le Mappeur pour les conversions entre DTO et entité.

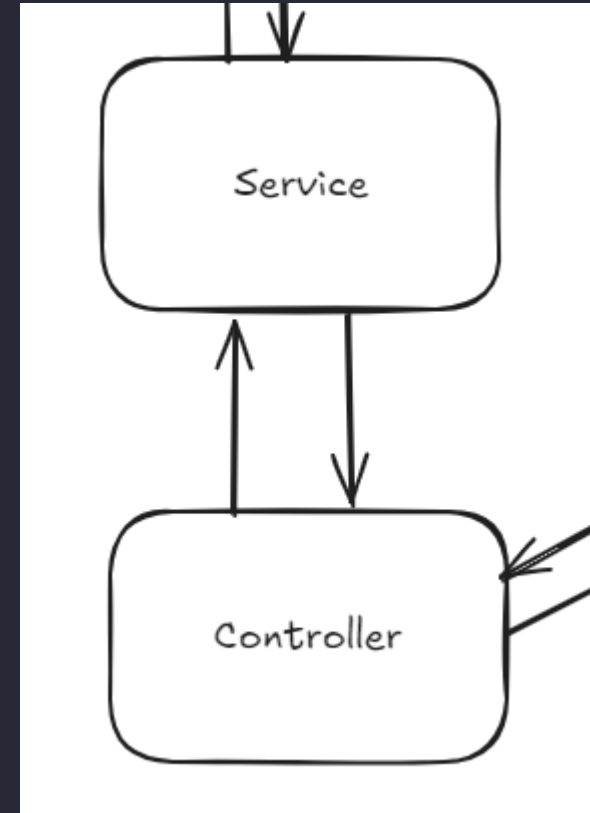




Controller

Créer un @Controller Spring permettant d'accéder aux méthodes du services

Celles-ci doivent permettre d'accéder aux opérations CRUD du Service en utilisant les actions HTTP appropriées.





Outils type bruno // postman

The screenshot displays the Postman web interface. At the top, there's a navigation bar with 'Home', 'Workspaces', and 'Explore' tabs, a search bar, and 'Sign In' and 'Create Account' buttons. The left sidebar shows a 'History' panel with a list of requests under 'Today'. The main panel shows a selected GET request to 'localhost:8081/api/utilisateur'. Below the URL bar, there are tabs for 'Params', 'Authorization', 'Headers (8)', 'Body', 'Pre-request Script', 'Tests', and 'Settings'. The 'Query Params' section is currently active, showing a table with 'Key' and 'Value' columns. Below this, the 'Body' tab is selected, showing a JSON response. The response status is '200 OK' with a time of '12 ms' and a size of '843 B'. The JSON body contains user information and a list of reservations.

History: Today
GET localhost:8081/api/utilisateur

GET localhost:8081/api/utilisateur

Params Authorization Headers (8) Body Pre-request Script Tests Settings

Query Params

Key	Value	Bulk Edit
Key	Value	

Body Cookies (1) Headers (14) Test Results

Status: 200 OK Time: 12 ms Size: 843 B Save Response

Pretty Raw Preview Visualize JSON

```
1 {
2   "id": 1,
3   "mail": "bob@hotmail.fr",
4   "username": "bob",
5   "password": "bob",
6   "reservations": [
7     {
8       "id": {
9         "boiteId": 38,
10        "utilisateurId": 1
11      },
12      "boite": {
13        "id": 38,
14        "nom": "Boite à lire du CEST",
15        "description": "CEST (Centre d'Education Sportive de Tours)",
16        "quantite": 12,
17        "pointGeo": "47.3903436256, 0.6961206773",
18        "reservations": null
19      }
20    ]
21  }
```

Create collections in Postman
Use collections to save your requests and share them with others.
Create a Collection

About Capgemini

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