SPRING DATA JPA

Software Engineering – E-Portfolio

AGENDA

- Spring Framework
- Jakarta Persistence API
- Spring Data JPA
- Praktisches Beispiel

SPRING FRAMEWORK

Framework für Anwendungsentwicklung in JAVA

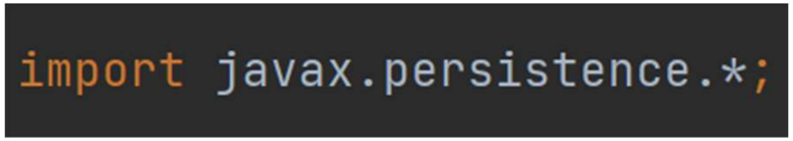
Prinzipien:

- POJOs
- Dependency Injection
- Aspektorientierte Programmierung
- Erweiterungen (z.B.: Spring Data)

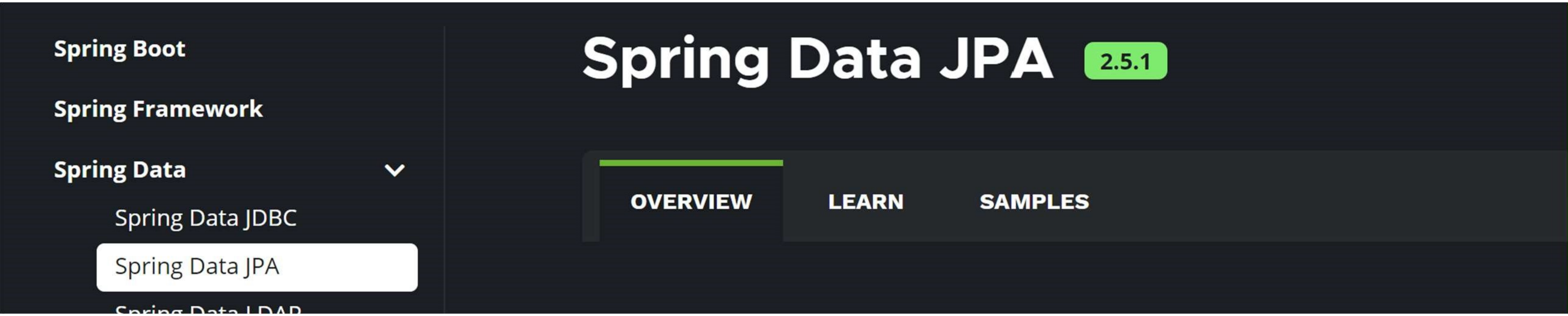
JAKARTA PERSISTENCE API (JPA)

API für JAVA-Anwendungen

Erleichtert Zuordnung, Verwaltung und die Übertragung von Java-Objekten zu Datenbankeinträgen



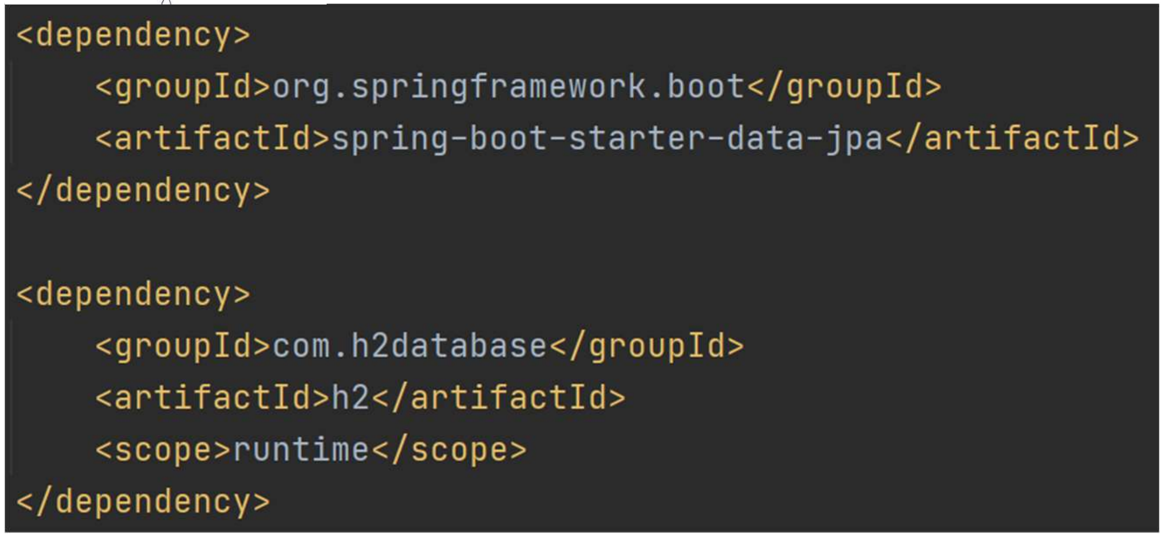
```java
import javax.persistence.*;
```



- Spring Modul
- „[…] enhanced support for JPA based data access layers”

GETTING STARTED

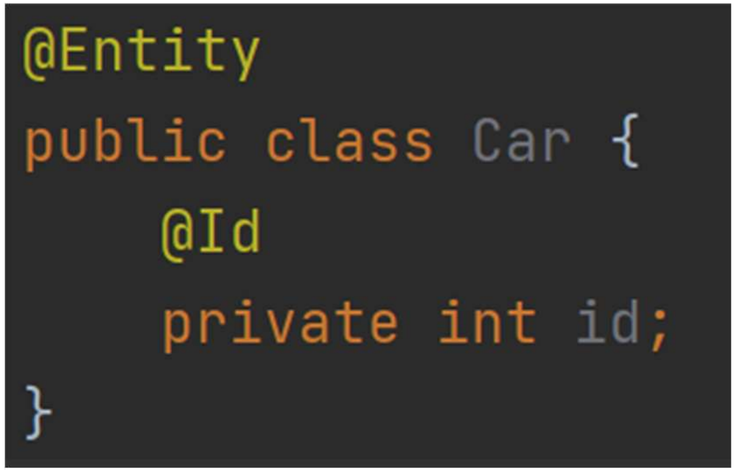
Maven™



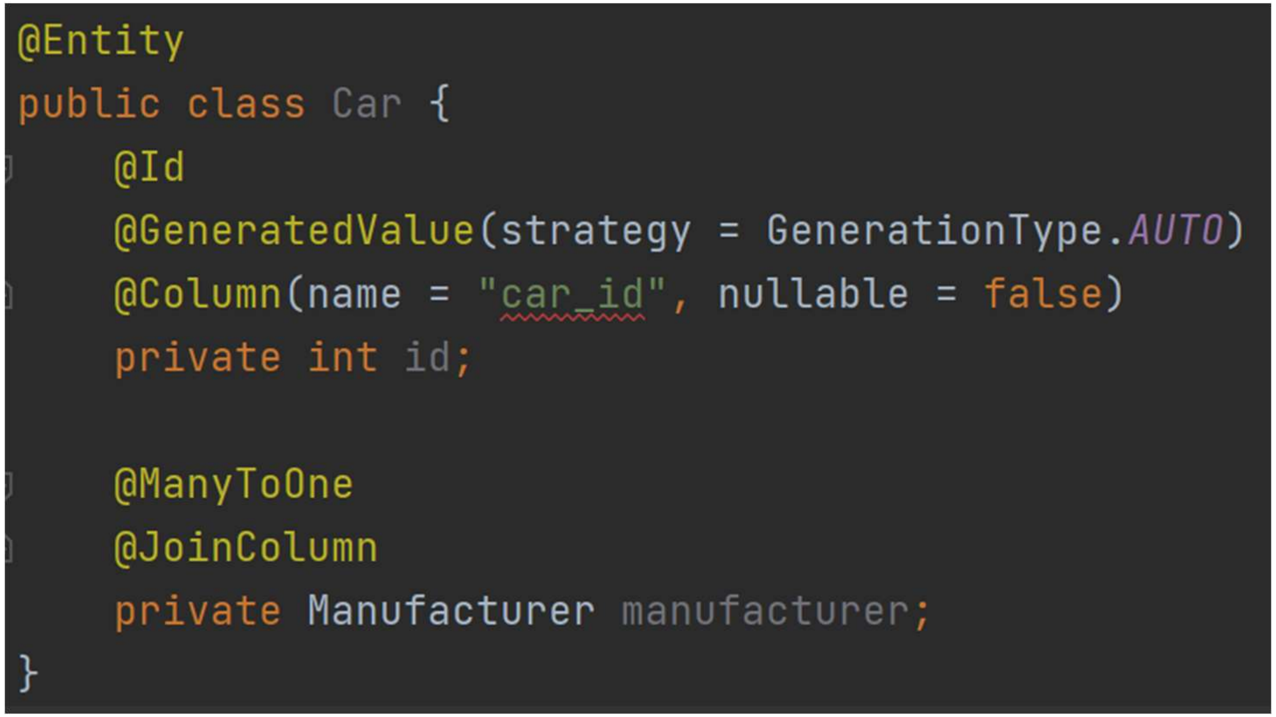
```xml
<dependency>
    <groupId>org.springframework.boot</groupId>
    <artifactId>spring-boot-starter-data-jpa</artifactId>
</dependency>

<dependency>
    <groupId>com.h2database</groupId>
    <artifactId>h2</artifactId>
    <scope>runtime</scope>
</dependency>
```

pom.xml

ENTITIES

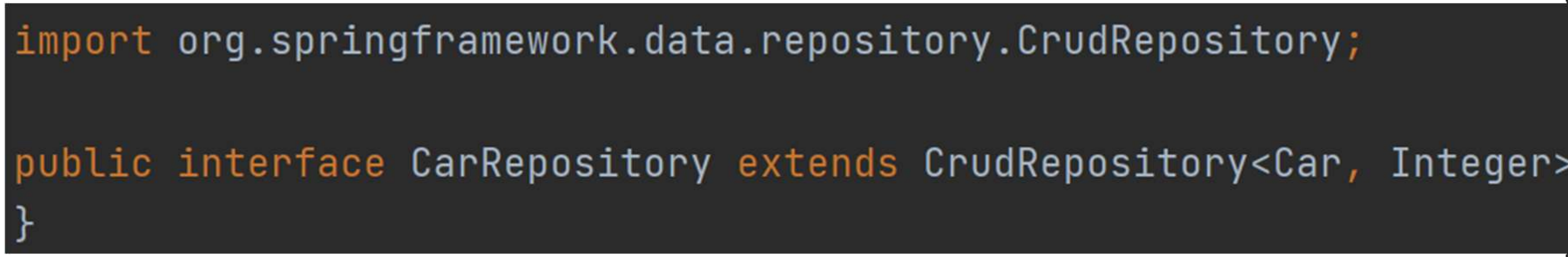


```
@Entity
public class Car {
    @Id
    private int id;
}
```

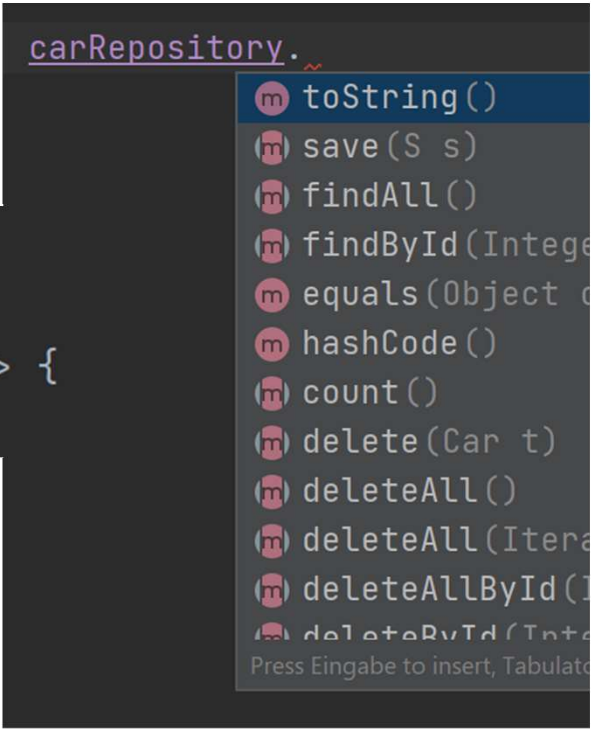


```
@Entity
public class Car {
    @Id
    @GeneratedValue(strategy = GenerationType.AUTO)
    @Column(name = "car_id", nullable = false)
    private int id;

    @ManyToOne
    @JoinColumn
    private Manufacturer manufacturer;
}
```

REPOSITORIES

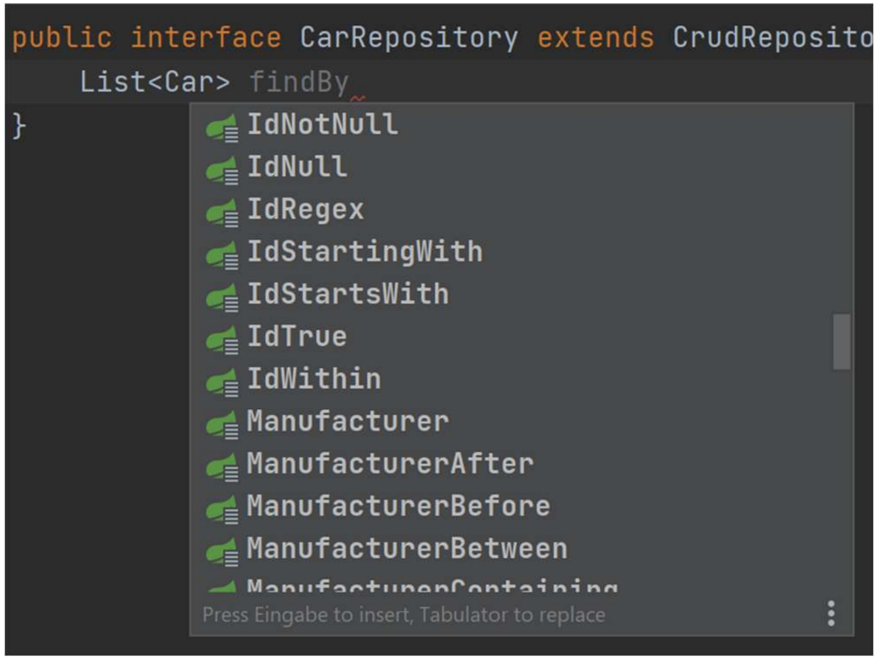


```
import org.springframework.data.repository.CrudRepository;

public interface CarRepository extends CrudRepository<Car, Integer> {
}
```



```
carRepository.
```

QUERY METHODS



```
public interface CarRepository extends CrudReposito
    List<Car> findBy
}
```

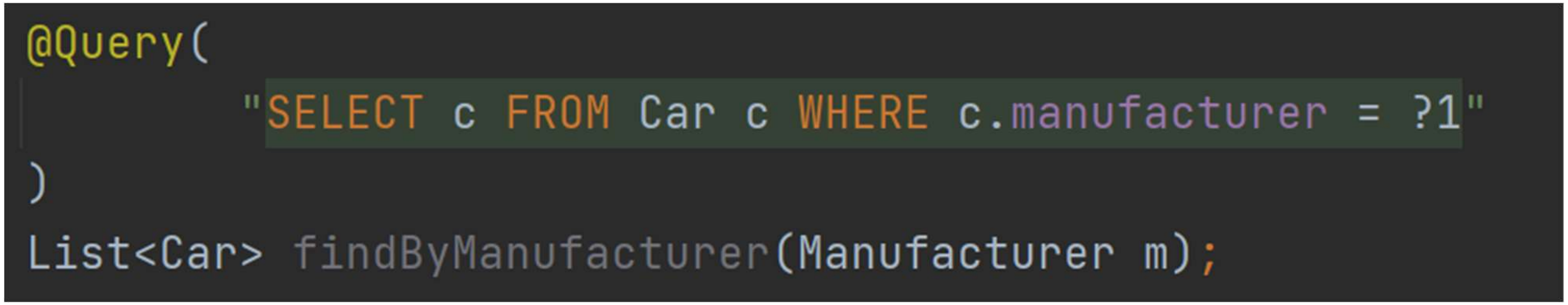
```
IdNotNull
IdNull
IdRegex
IdStartingWith
IdStartsWith
IdTrue
IdWithin
Manufacturer
ManufacturerAfter
ManufacturerBefore
ManufacturerBetween
ManufacturerContaining
```

Press Eingabe to insert, Tabulator to replace

Keywords
And/Or
Between
Contains

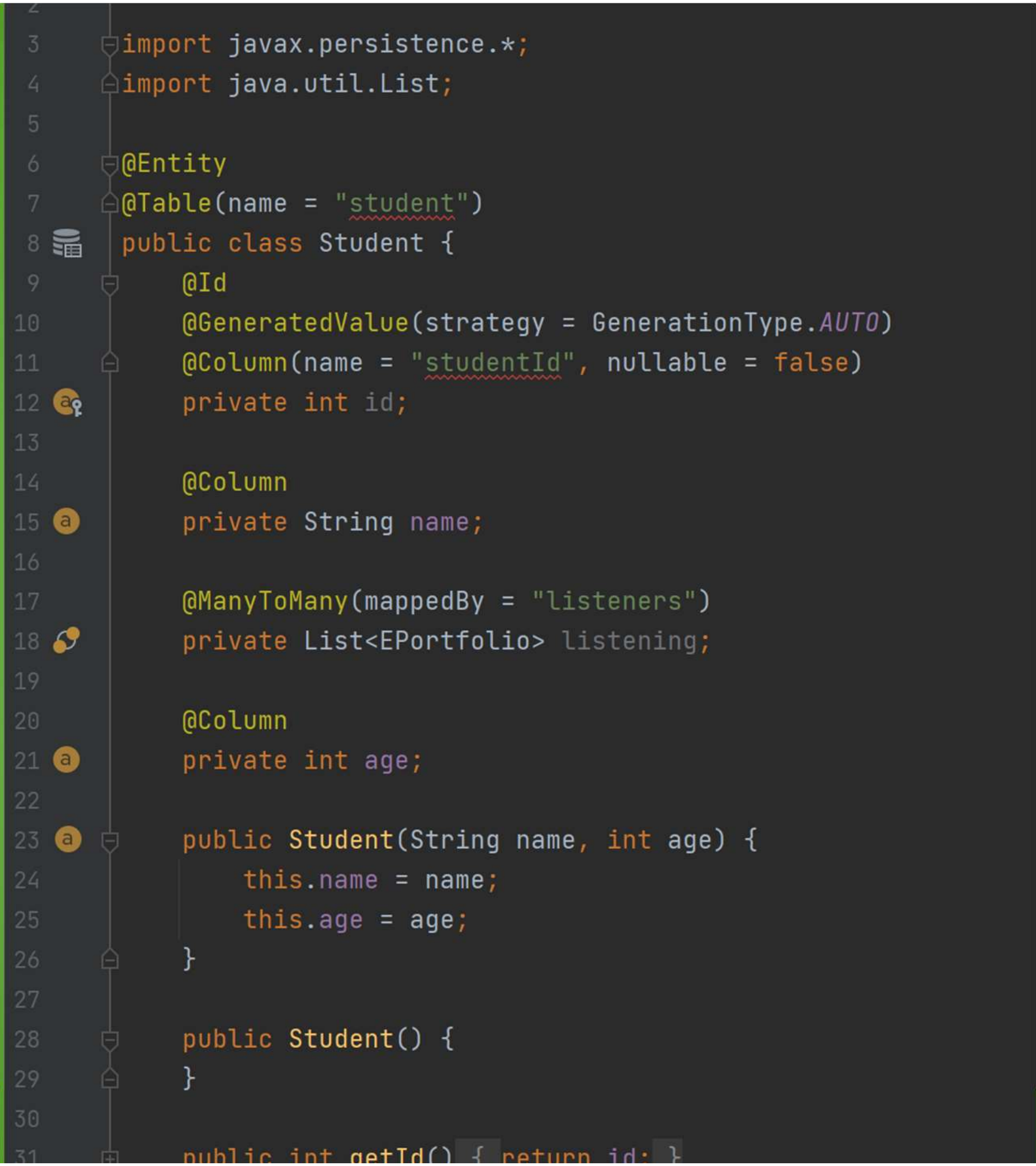
…

@QUERY - JPQL



```
@Query(
        "SELECT c FROM Car c WHERE c.manufacturer = ?1"
)
List<Car> findByManufacturer(Manufacturer m);
```

PRAKTISCHES BEISPIEL



```java
import javax.persistence.*;
import java.util.List;

@Entity
@Table(name = "student")
public class Student {
    @Id
    @GeneratedValue(strategy = GenerationType.AUTO)
    @Column(name = "studentId", nullable = false)
    private int id;

    @Column
    private String name;

    @ManyToMany(mappedBy = "listeners")
    private List<EPortfolio> listening;

    @Column
    private int age;

    public Student(String name, int age) {
        this.name = name;
        this.age = age;
    }

    public Student() {
    }

    public int getId() { return id; }
```

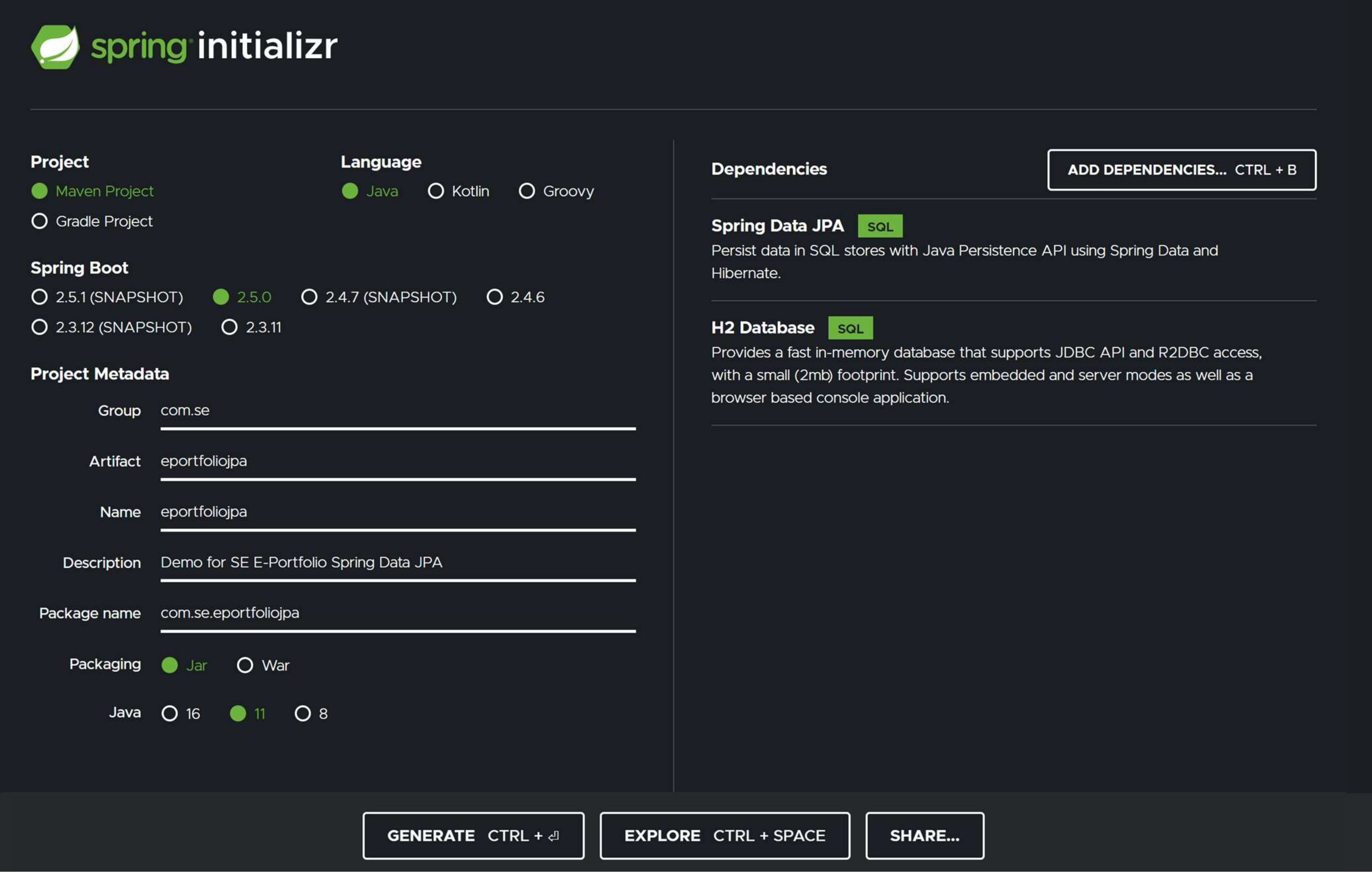
AUFGABE

E-Portfolio und Studenten Verwaltung

Ein E-Portfolio wird von einem Studenten gehalten und mehrere Studenten können zuhören leonhardstengel/dhbw-se-eportfolio-springdatajpa

Initial Commit

https://start.spring.io/



spring initializr

Project

● Maven Project
○ Gradle Project

Language

● Java ○ Kotlin ○ Groovy

Spring Boot

○ 2.5.1 (SNAPSHOT) ● 2.5.0 ○ 2.4.7 (SNAPSHOT) ○ 2.4.6
○ 2.3.12 (SNAPSHOT) ○ 2.3.11

Project Metadata

Group	com.se
Artifact	eportfoliojpa
Name	eportfoliojpa
Description	Demo for SE E-Portfolio Spring Data JPA
Package name	com.se.eportfoliojpa
Packaging	● Jar ○ War
Java	○ 16 ● 11 ○ 8

Dependencies

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

H2 Database SQL
Provides a fast in-memory database that supports JDBC API and R2DBC access, with a small (2mb) footprint. Supports embedded and server modes as well as a browser based console application.