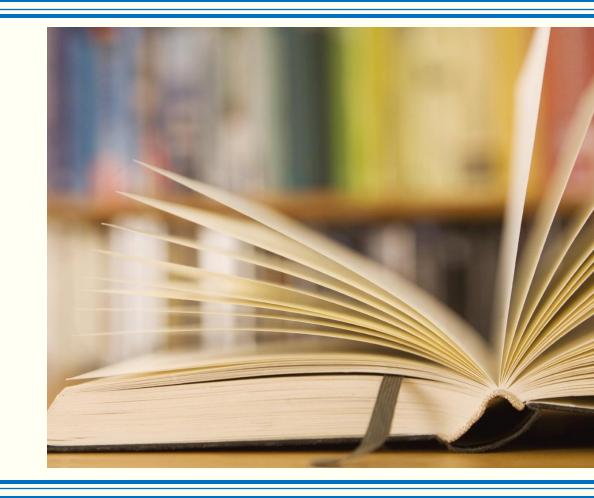
# ENTERPRISE ARCHITECTURE

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Version 2.1 ©2022



# LESSON 11 SPRING DATA JPA

## **Project Dependencies**

- Starter projects
  - Web > Spring Web
  - SQL > Spring Data JPA
  - Developer Tools > Spring Boot DevTools
- H2
- MySQL

## Entity

```
@Entity
public class Student {
    @Id@GeneratedValue(strategy = GenerationType.AUTO)
    private long id;
    private String name;
    private float gpa;
    public Student() {
          public String getName() {
    return name;
          public void setName(String name) {
    this.name = name;
          public float getGpa() {
    return gpa;
          public void setGpa(float gpa) {
    this.gpa = gpa;
```

## Repository

```
@Repository
@Transactional
public class StudentPersistence {
      @PersistenceContext
      private EntityManager em;
      public long insert(Student student) {
          em.persist(student);
          return student.getId();
```

#### Command Line Runner

```
@Component
public class StudentCommadLineRunner implements CommandLineRunner {
       @Autowired
      private StudentPersistence studentPersistence;
      @Override
      public void run(String... args) throws Exception {
          studentPersistence.insert(newStudent("Jack", 3.3f));
          studentPersistence.insert(newStudent("John", 2.0f));
          studentPersistence.insert(newStudent("Jill", 3.5f));
          studentPersistence.insert(newStudent("Jim", 3.0f));
```

# Spring Boot H2 Configuration

- spring.datasource.url=jdbc:h2:mem:testdb
- spring.datasource.driverClassName=org.h2.Driver
- spring.datasource.username=sa
- spring.datasource.password=password



#### Create Interfaces

### Repository

- public interface StudentRepository extends JpaRepository<Student, Long> {
- }

#### Command Line Runner

# How is the Repository Working

- Is there still em? emf?
- Is the interface being implemented?
- Who is implementing the interface?
- Spring boot? Spring core? Spring Data?
- What can Spring Data do?
  - CRUD
  - Queries?
- What if I need to do something Spring data is not doing (complex query)?

# • JpaRepository<Entity, Id>

- Save(student)
- FindAll()
- FindById(1l)
- Add to repository
  - public List<Student> findByName(Stringname);

# application.properties (Spring Boot Configuration)

#### **H2**

- spring.datasource.url=jdbc:h2:mem:testd
- spring.datasource.driverClassName=org. h2.Driver
- spring.datasource.username=sa
- spring.datasource.password=password

## MySql

- spring.datasource.url=jdbc:mysql://loca lhost:3306/cs544db
- spring.datasource.driverClassName=co m.mysql.cj.jdbc.Driver
- spring.datasource.username=ea
- spring.datasource.password=cs544

### Queries

- Check the documentation
- Dynamic Queries
  - Repository
    - Query("SELECT's FROM Student's WHERE's.gpa >= ?1")
    - List<Student> findStudentsThatPassed(float passingGpa);
- Named Queries
  - Entity
    - @NamedQuery(name= "Student.findFailing", query="SELECT's FROM Student's WHERE's.gpa < 3.0")
  - Repository
    - List<Student> findFailing();
- Native Queries
  - Repository
    - Query("SELECT \* FROM Student WHERE gpa >= ?1", nativeQuery = true)
    - List<Student> findStudentsThatPassedNative(float passingGpa);

#### Criteria API

## Specification

```
public Predicate
toPredicate(Root<Student> root, CriteriaQuery<?>
query, CriteriaBuilder criteriaBuilder) {
criteriaBuilder.greaterThan(root.get("gpa"), 3.0);
public static Specification Student>
hasGpaGreaterThan(float gpa) {
    return (root, query, builder) ->
builder.greaterThan(root.get("gpa"), gpa);
```

## Repository & Usage

public interface StudentRepository extends
JpaRepository<Student, Long>,
JpaSpecificationExecutor<Student> {

**----**

studentRepository.findAll(hasGpdMoreThan(3.0f)); studentRepository.findAll(hasGpaGreaterThan(3.0f));

## Implement CRUD Operations

- studentRepository.findAll()
- studentRepository.findById(id)
- studentRepository.delete(student)
- studentRepository.deleteById(id)
- studentRepository.save(student)