

# Spring JPA

- description :
- author :
- email : hylee@repia.com
- lastupdate : 2020-12-16

## JPA

- SQL?
- ( )
- ?
- DB
- - Table
- 가 가

## JPA

- JPA . -
- . ( )
- JPA .

## JPA

- or

## JPA

- ( , )
- ( )
- 
- 1 ( )
- ( )
- 
- SQL 가
- 
- (Dirty Checking)
- 
- 
- ,
-

- (Lazy Loading)

```
@Entity : JPA가
public, protected
@Table(name = "
        ")

        가
create, create-drop, update, validate, auto, none
        create, update
        update, validate
        validate, none
@Column JPA, ddl
updatable = false,
nullable = false
unique = true,

sql date= , time= , timestamp

GeneratorType.IDENTIFY
persist() 가
GeneratorType.SEQUENCE
        가
```

```
,
- ( ),
JPA

( ... )

, ... 가?

가 .
```

- ( 가 ),
- 가 ( )
- 가
- mappedBy ( )
- mappedBy

- mappedBy = , , 가 ,
- .
- .
- 가 . ( - )
- - 가 , (1:n)
  - , !!

- 
- 
- 
- 

```
//
public void addMember(MemberHello member) {
    member.setTeam(this);
    members.add(member);
}

//
public void changeTeam(Team team) {
    this.team = team;
    team.getMembers().add(this); //
}
```

- - toString(), lombok, JSON
  - 
  - lombok toString , Entity (Api (⇒ DTO ), )
- - - (@ManyToOne)
      - 가 , , - 가 , @ManyToOne
      - ( mappedBy가 )
    - (@OneToMany)
      - , 가 가 -
      - , 가 ,
      - 가
      - @JoinColumn . ( ) ,
      - , 가 (@JoinColumn(name="", insertable=false, updatable=false)

- (@OneToOne)
  - 
  - @JoinColumn ( )
  - 가 (mappedBy(name = ""))
  - 
  - 가
  - 
  -
- (@ManyToMany)
  - 2
  - 가 , 가
  - 2 가
  - 가
  - !!
  - @ManyToMany → @OneToMany,
  - @ManyToOne
  - PK 가 , Pk ,
- ,
  - 가
  - 
  - 가 가
  - 가 가
  - →
  - ← 가 , 가 2
- - 
  - 
  - 
  -

가

가

, , 가

@MappedSuperclass - 가

abstract( )

, , ,

@Entity @MappedSuperclass 가

```

em.getReference() //
?
.
(DB 가
, 가
가
,
== instanceof
가 em.getReference() (
)
JPA , == true
PersistenceUnitUtil.isLoaded(Object entity)
entity.getClass().getName()
, JPA 가
org.hibernate.Hibernate.initialize(entity);
(EAGER), (LAZY)
가
JPQL N+1
@ManyToOne, @OneToOne -> LAZY
@OneToMany, @ManyToMany
@ Fetch join, annotation,
!, JPQL fetch , !
가 .

```

(CASCADE)

```

CASCADE.ALL or CASCADE.PERSIST
-
가
(
orphanRemoval = true
가
가 (@OneToOne, @OneToMany 가 )
CASCADE.ALL, orphanRemoval = true
(DDD Aggregate Root
)
:

```

```

        가 가 ( )
        가 가

        (      ->      가 )
        가
        가

        ORM                      가 ( find-grained)
                                가
        @AttributeOverrides, @AttributeOverride

                                (= <-      ( )      , new      )
                                .
        (immutable object)      ,
        (      ,      private      )
        new      가      ,      (
        .      !!)

```

```

:      !!

        가      .

(identity)      :      , ==
(equivalence)      :      , equals()

equals() override      . (
    , hashCode      ...)

(@ElementCollection, @CollectionTable      )

        가      가      가      ,
가

        가      new      가      (side effect      )
        가
        .
        ,
        .
        (null X,      x)
        (      )

```

```

JPQL: Java Persistence Query Language ( !! )
      ( SQL )
      -> SQL (feat Dialect)
      SQL, SQL
      ( )
      : , , ( , ), DISTINCT
가
      setFirstResult(0) - 0

      ( )
      - ON
      JPA 2.1
      가 , ( 5.1 가 )
exists, ALL, ANY 가 , (NOT) IN 가
JPA WHERE, HAVING 가 , SELECT
FROM JPQL 가 ( )
      Native Query Application , 2
JPQL
      : 'HELLO', 'She''s'
      : 10L, 10D, 10F
Boolean: TRUE, FALSE
ENUM: FQCN
      : TYPE(m) = Member
      : EXISTS, IN, AND, OR, NOT, =, >, >=, <, <=, <>, BETWEEN, LIKE, IS
NULL

      CASE : 가
      CASE :
COALESCE:
NULLIF:

      CONCAT, SUBSTRING, TRIM, LOWER, UPPER, LENGTH, LOCATE, ABS, SQRT, MOD,
SIZE, INDEX(JPA )
      (Dialect 가 ), select
function('group_concat', i.name) from Item i ...

      : , m.username, , 가
      :
      : @ManyToOne, @OneToOne, , (INNER
JOIN) , 가 가
      : @OneToMany, @ManyToMany, , m.orders,
      , 가( size 가 )
FROM 가
      : 가 (join )
      , (JOIN
)

```

```

(fetch join)
JPQL ( SQL )
SQL
join fetch
가 fetch join ( -
가 )
JPA DISTINCT (SQL DISTINCT JPA DISTINCT 가
)
( ) - N+1
가 ( ), 가
API . ( )
, 가 ,
( N+1 ) - ( ) 1000

```

TREAT(JAP 2.1), 가

```

JPQL 가
JPA Criteria
JPQL
JAVA ( , ) .
SQL 가 ( )
, SQL
JPQL
(m) (as 가 ) - 가 (Member)
QueryDSL
JPQL
, 가
SQL
JDBC API , MyBatis, SpringJdbcTemplate
em.persist()
// flush -> commit, query
createNativeQuery, createQuery flush

```

- context-hibernate.xml
- context-jpa-respository.xml

## context-hibernate.xml

Tip

3

```
<property name="dataSource" ref="" />
```

- context-datasource.xml    JPA    DB    bean ID

```
<property name="packagesToScan" value="" >
```

- values

```
<prop key="hibernate.dialect">
```

- JPA가    DB
- 

```
<?xml version="1.0" encoding="utf-8"?>
<beans xmlns="http://www.springframework.org/schema/beans"
  xmlns:context="http://www.springframework.org/schema/context"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.springframework.org/schema/beans
http://www.springframework.org/schema/beans/spring-beans-4.0.xsd
http://www.springframework.org/schema/context
http://www.springframework.org/schema/context/spring-context-4.0.xsd">

  <!--      가      EntityManager      , @PersistenceContext      -->
  <bean id="entityManagerFactory"
class="org.springframework.orm.jpa.LocalContainerEntityManagerFactoryBean">
    <property name="dataSource" ref="egov.dataSource" />
    <!--      -->
    <property name="packagesToScan" value="com" />
    <!--      -->
    <property name="jpaVendorAdapter">
      <bean
class="org.springframework.orm.jpa.vendor.HibernateJpaVendorAdapter">
        <property name="showSql" value="true" />
        <property name="generateDdl" value="true" />
      </bean>
    </property>
```

```

<!-- persistence.xml                                     가  -->
<property name="jpaProperties">
  <props>
    <!-- <prop
key="hibernate.ejb.naming_strategy">org.hibernate.cfg.EJB3NamingStrategy</pr
op> -->

    <prop
key="hibernate.ejb.naming_strategy">org.hibernate.cfg.ImprovedNamingStrategy
</prop>

    <!-- hibernate 5                                     (4          )-
    <prop key="hibernate.naming.implicit-
strategy">org.hibernate.boot.model.naming.ImplicitNamingStrategyLegacyJpaImp
l</prop>

    <prop key="hibernate.naming.physical-
strategy">org.hibernate.boot.model.naming.PhysicalNamingStrategyStandardImpl
</prop>

    -->
    <prop key="hibernate.hbm2ddl.auto">validate</prop>
    <prop
key="hibernate.dialect">org.hibernate.dialect.Oracle10gDialect</prop>
    <prop key="hibernate.show_sql">true</prop>
    <prop key="hibernate.format_sql">true</prop>
    <prop key="hibernate.use_sql_comments">true</prop>
    <prop key="hibernate.jdbc.batch_size">5</prop>
  </props>
</property>
</bean>

</beans>

```

## hibernate.dialect

|                           |                                             |
|---------------------------|---------------------------------------------|
| DB2                       | org.hibernate.dialect.DB2Dialect            |
| DB2 AS/400                | org.hibernate.dialect.DB2400Dialect         |
| DB2 OS390                 | org.hibernate.dialect.DB2390Dialect         |
| PostgreSQL                | org.hibernate.dialect.PostgreSQLDialect     |
| MySQL5                    | org.hibernate.dialect.MySQL5Dialect         |
| MySQL5 with InnoDB        | org.hibernate.dialect.MySQL5InnoDBDialect   |
| MySQL with MyISAM         | org.hibernate.dialect.MySQLMyISAMDialect    |
| Oracle (any version)      | org.hibernate.dialect.OracleDialect         |
| Oracle 9i                 | org.hibernate.dialect.Oracle9iDialect       |
| Oracle 10g                | org.hibernate.dialect.Oracle10gDialect      |
| Oracle 11g                | org.hibernate.dialect.Oracle10gDialect      |
| Sybase                    | org.hibernate.dialect.SybaseASE15Dialect    |
| Sybase Anywhere           | org.hibernate.dialect.SybaseAnywhereDialect |
| Microsoft SQL Server 2000 | org.hibernate.dialect.SQLServerDialect      |

|                           |                                            |
|---------------------------|--------------------------------------------|
| Microsoft SQL Server 2005 | org.hibernate.dialect.SQLServer2005Dialect |
| Microsoft SQL Server 2008 | org.hibernate.dialect.SQLServer2008Dialect |
| SAP DB                    | org.hibernate.dialect.SAPDBDialect         |
| Informix                  | org.hibernate.dialect.InformixDialect      |
| HypersonicSQL             | org.hibernate.dialect.HSQLDialect          |
| H2 Database               | org.hibernate.dialect.H2Dialect            |
| Ingres                    | org.hibernate.dialect.IngresDialect        |
| Progress                  | org.hibernate.dialect.ProgressDialect      |
| Mckoi SQL                 | org.hibernate.dialect.MckoiDialect         |
| Interbase                 | org.hibernate.dialect.InterbaseDialect     |
| Pointbase                 | org.hibernate.dialect.PointbaseDialect     |
| FrontBase                 | org.hibernate.dialect.FrontbaseDialect     |
| Firebird                  | org.hibernate.dialect.FirebirdDialect      |

## context-jpa-respository.xml

Tip

```
<jpa:repositories base-package="">
```

- base-package=""

```
<?xml version="1.0" encoding="UTF-8"?>
<beans xmlns="http://www.springframework.org/schema/beans"
  xmlns:jpa="http://www.springframework.org/schema/data/jpa"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.springframework.org/schema/beans
http://www.springframework.org/schema/beans/spring-beans-4.0.xsd
http://www.springframework.org/schema/data/jpa
http://www.springframework.org/schema/data/jpa/spring-jpa.xsd">

  <jpa:repositories base-package="com"></jpa:repositories>

</beans>
```

## POM.xml

```
<properties>
  <egovframework.jpa.version>3.7.0</egovframework.jpa.version>
  <hibernate.version>4.3.11.Final</hibernate.version>
</properties>
<dependencies>
  <dependency>
```

```
<groupId>egovframework.rte</groupId>
<artifactId>egovframework.rte.psl.data.jpa</artifactId>
<version>${egovframework.jpa.version}</version>
</dependency>

<!-- Hibernate -->
<dependency>
  <groupId>org.hibernate</groupId>
  <artifactId>hibernate-core</artifactId>
  <version>${hibernate.version}</version>
</dependency>

<dependency>
  <groupId>org.hibernate</groupId>
  <artifactId>hibernate-validator</artifactId>
  <version>5.4.2.Final</version>
</dependency>
<dependency>
  <groupId>org.springframework.data</groupId>
  <artifactId>spring-data-jpa</artifactId>
  <version>1.11.10.RELEASE</version>
  <exclusions>
    <exclusion>
      <groupId>org.slf4j</groupId>
      <artifactId>slf4j-api</artifactId>
    </exclusion>
    <exclusion>
      <groupId>org.slf4j</groupId>
      <artifactId>jcl-over-slf4j</artifactId>
    </exclusion>
  </exclusions>
</dependency>
</dependencies>
```

## Builder

- [SpringBoot + JPA] Lombok @Builder

, spring, jpa,

From:

<http://rwiki.repia.com/> -  
2023.12

Permanent link:

<http://rwiki.repia.com/doku.php?id=wiki:spring:jpa&rev=1657020526>

Last update: **2022/07/05 20:28**

