2025/10/31 03:23 1/13 Spring JPA

# Spring JPA

```
description:
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lastupdate: 2020-12-16
```

## JPA

### JPA

```
• JPA
• .( )
• JPA
```

## JPA

• or

# JPA

```
• ( , )
• ( )

• ( )

• 1 ( )
• ( )
• ( )
• ( )
• (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
                                            ddl
  updatable = false,
  nullable = false
 unique = true,
  sql date= , time= , tiemstamp
 GeneratorType.IDENTIFY
  persist()
                  가
 GeneratorType.SEQUENCE
                    가
```

2025/10/31 03:23 3/13 Spring JPA

```
, 가
• mappedBy =
                                                                 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
                                                                 , @ManyToOne
                            가
                                       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
                              !!
                                              @ManyToMany → @OneToMany,
          @ManyToOne
                        PΚ
                            가
                                                     Pk
                             가
                   가
                                     가
             가
                               가 2
가
```

```
가 , , 가 가 이에AppedSuperclass - 가 abstract( ) 에AppedSuperclass 가 예Entity @MappedSuperclass 가
```

2025/10/31 03:23 5/13 Spring JPA

```
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
        (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 (find-grained)
       ORM
                                                  가
                                   가
@AttributeOverrides, @AttributeOverride
                           (= <- ( )
                                               , new
         (immutable object)
                    private
       new
                    가
                    !!)
                                                        !!
               가
   (identity)
   (equivalence) :
                                   , equals()
       equals() override
                                                         . (
              , hashCode
                             ...)
        (@ElementCollection, @CollectionTable
                       가
                                       가
   가
           가
                                      (side effect
                 new
                      가
                                                         (null X,
                                                                      x)
                                (
                                          )
```

```
가 100%
JPQL 가
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
     FR0M
                       JP0L
                               가 (
                                                            )
        Native Query
                       Application
                                              2
 JPQL
    : 'HELLO', 'She''s'
     : 10L, 10D, 10F
   Boolean: TRUE, FALSES
   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 ...
                                                         가
                     , m.username,
               : @ManyToOne, @OneToOne,
                                                              (INNER
       , 가
JOIN)
               가
                : @OneToMany, @ManyToMany,
                                                   , m.orders,
              가( size
                        가 )
       FR0M
                                                     가
     : 가
                                         (join )
                                                              (JOIN
     )
```

```
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```

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

```
가
 TREAT(JAP 2.1),
 JPQL
                                                             가
Named
                          JPQL
                                             ), XML
                                                        가
              @Entity
                                   가
                      SQL
                                      &
                                                   가
 JPA
                                    Named
 JPA
 UPDATE, DELETE
 executeUpdate()
 INSERT(insert into .. select,
                                               )
JPA Criteria
 JPQL
 JAVA
                                           ).
 SQL
             가
                    , SQL
 JPQL
                             (Member)
          (m) (as 가 ) - 가
QueryDSL
 JPQL
                        가
```

2025/10/31 03:23 9/13 Spring JPA

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

#### context-hibernate.xml

```
cproperty name="dataSource" ref="egov.dataSource" />
      roperty name="packagesToScan" value="com" />
       <!--
       property name="jpaVendorAdapter">
          <br/>bean
class="org.springframework.orm.jpa.vendor.HibernateJpaVendorAdapter">
             roperty name="showSql" value="true" />
              coperty name="generateDdl" value="true" />
          </bean>
      </property>
                                       7t -->
       <!-- persistence.xml
      roperty name="jpaProperties">
          cprops>
              <!-- <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>
              key="hibernate.hbm2ddl.auto">validate
              prop
key="hibernate.dialect">org.hibernate.dialect.Oracle10gDialect
             prop key="hibernate.use sql comments">true
              </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

2025/10/31 03:23 11/13 Spring JPA

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### 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/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

```
cproperties>
   <egovframework.jpa.version>3.7.0</egovframework.jpa.version>
   <hibernate.version>4.3.11.Final</hibernate.version>
</properties>
<dependencies>
   <dependency>
       <groupId>egovframework.rte
       <artifactId>egovframework.rte.psl.data.jpa</artifactId>
       <version>${egovframework.jpa.version}</version>
   </dependency>
   <!-- Hibernate -->
   <dependency>
       <groupId>org.hibernate
       <artifactId>hibernate-core</artifactId>
       <version>${hibernate.version}
   </dependency>
   <dependency>
       <groupId>org.hibernate
       <artifactId>hibernate-validator</artifactId>
       <version>5.4.2.Final
   </dependency>
   <dependency>
       <groupId>org.springframework.data
       <artifactId>spring-data-jpa</artifactId>
       <version>1.11.10.RELEASE
       <exclusions>
           <exclusion>
               <groupId>org.slf4j
               <artifactId>slf4j-api</artifactId>
           </exclusion>
           <exclusion>
               <groupId>org.slf4j
               <artifactId>jcl-over-slf4j</artifactId>
           </exclusion>
       </exclusions>
   </dependency>
</dependencies>
```

### **Builder**

• [SpringBoot + JPA] Lombok @Builder

2025/10/31 03:23 13/13 Spring JPA

, spring, jpa,

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