Hibernate

Contents

Criteria Queries

Source: https://docs.jboss.org/hibernate/orm/3.3/reference/en/html/querycriteria.html

Hibernate features an intuitive, extensible criteria query API.

15.1. Creating a Criteria instance

The interface org.hibernate.Criteria represents a query against a particular persistent class. The Session is a factory for Criteria instances.

```
Criteria crit = sess.createCriteria(Cat.class);
crit.setMaxResults(50);
List cats = crit.list();
```

15.2. Narrowing the result set

An individual query criterion is an instance of the interface org.hibernate.criterion.Criterion. The class org.hibernate.criterion.Restrictions defines factory methods for obtaining certain built-in Criterion types.

```
List cats = sess.createCriteria(Cat.class)
    .add( Restrictions.like("name", "Fritz%") )
    .add( Restrictions.between("weight", minWeight, maxWeight) )
    .list();
```

Restrictions can be grouped logically.

```
List cats = sess.createCriteria(Cat.class)
    .add( Restrictions.like("name", "Fritz%") )
    .add( Restrictions.or(
        Restrictions.eq( "age", new Integer(0) ),
        Restrictions.isNull("age")
    ) )
    .list();
List cats = sess.createCriteria(Cat.class)
    .add( Restrictions.in( "name", new String[] { "Fritz", "Izi", "Pk" } ) )
    .add( Restrictions.disjunction()
        .add( Restrictions.isNull("age") )
        .add( Restrictions.eq("age", new Integer(0) ) )
        .add( Restrictions.eq("age", new Integer(1) ) )
        .add( Restrictions.eq("age", new Integer(2) ) )
    ) )
    .list();
```

There are a range of built-in criterion types (Restrictions subclasses). One of the most useful allows you to specify SQL directly.

```
List cats = sess.createCriteria(Cat.class)
    .add( Restrictions.sqlRestriction("lower({alias}.name) like lower(?)", "Fritz%", Hibernate.STRING) )
    .list();
```

The {alias} placeholder with be replaced by the row alias of the queried entity.

You can also obtain a criterion from a Property instance. You can create a Property by calling Property.forName():

```
Property age = Property.forName("age");
List cats = sess.createCriteria(Cat.class)
    .add( Restrictions.disjunction()
        .add( age.isNull() )
        .add( age.eq( new Integer(0) ) )
        .add( age.eq( new Integer(1) ) )
        .add( age.eq( new Integer(2) ) )
    ) )
    .add( Property.forName("name").in( new String[] { "Fritz", "Izi", "Pk" } ) )
    .list();
```

15.3. Ordering the results

You can order the results using org.hibernate.criterion.Order.

```
List cats = sess.createCriteria(Cat.class)
    .add( Restrictions.like("name", "F%")
    .addOrder( Order.asc("name") )
    .addOrder( Order.desc("age") )
    .setMaxResults(50)
    .list();
List cats = sess.createCriteria(Cat.class)
    .add( Property.forName("name").like("F%") )
    .addOrder( Property.forName("name").asc() )
    .addOrder( Property.forName("age").desc() )
    .setMaxResults(50)
```

```
    .list();
```

15.4. Associations

By navigating associations using createCriteria() you can specify constraints upon related entities:

```
List cats = sess.createCriteria(Cat.class)
    .add( Restrictions.like("name", "F%") )
    .createCriteria("kittens")
        .add( Restrictions.like("name", "F%") )
    .list();
```

The second createCriteria() returns a new instance of Criteria that refers to the elements of the kittens collection.

There is also an alternate form that is useful in certain circumstances:

```
List cats = sess.createCriteria(Cat.class)
    .createAlias("kittens", "kt")
    .createAlias("mate", "mt")
    .add( Restrictions.eqProperty("kt.name", "mt.name") )
    .list();
```

(createAlias() does not create a new instance of Criteria.)

The kittens collections held by the Cat instances returned by the previous two queries are not pre-filtered by the criteria. If you want to retrieve just the kittens that match the criteria, you must use a ResultTransformer.

```
List cats = sess.createCriteria(Cat.class)
    .createCriteria("kittens", "kt")
        .add( Restrictions.eq("name", "F%") )
    .setResultTransformer(Criteria.ALIAS_TO_ENTITY_MAP)
    .list();
Iterator iter = cats.iterator();
while ( iter.hasNext() ) {
    Map map = (Map) iter.next();
    Cat cat = (Cat) map.get(Criteria.ROOT_ALIAS);
    Cat kitten = (Cat) map.get("kt");
}
```

15.5. Dynamic association fetching

You can specify association fetching semantics at runtime using setFetchMode().

```
List cats = sess.createCriteria(Cat.class)
    .add( Restrictions.like("name", "Fritz%") )
    .setFetchMode("mate", FetchMode.EAGER)
    .setFetchMode("kittens", FetchMode.EAGER)
    .list();
```

This query will fetch both mate and kittens by outer join. See Section 19.1, ?Fetching strategies? for more information.

15.6. Example queries

The class org.hibernate.criterion.Example allows you to construct a query criterion from a given instance.

```
Cat cat = new Cat();
cat.setSex('F');
cat.setColor(Color.BLACK);
List results = session.createCriteria(Cat.class)
    .add( Example.create(cat) )
    .list();
```

Version properties, identifiers and associations are ignored. By default, null valued properties are excluded.

You can adjust how the Example is applied.

```
Example example = Example.create(cat)
    .excludeZeroes()           //exclude zero valued properties
    .excludeProperty("color")  //exclude the property named "color"
    .ignoreCase()              //perform case insensitive string comparisons
    .enableLike();             //use like for string comparisons
List results = session.createCriteria(Cat.class)
    .add(example)
    .list();
```

You can even use examples to place criteria upon associated objects.

```
List results = session.createCriteria(Cat.class)
    .add( Example.create(cat) )
    .createCriteria("mate")
        .add( Example.create( cat.getMate() ) )
    .list();
```

15.7. Projections, aggregation and grouping

The class org.hibernate.criterion.Projections is a factory for Projection instances. You can apply a projection to a query by calling setProjection().

```
List results = session.createCriteria(Cat.class)
    .setProjection( Projections.rowCount() )
    .add( Restrictions.eq("color", Color.BLACK) )
    .list();
List results = session.createCriteria(Cat.class)
    .setProjection( Projections.projectionList()
        .add( Projections.rowCount() )
        .add( Projections.avg("weight") )
        .add( Projections.max("weight") )
        .add( Projections.groupProperty("color") )
    )
    .list();
```

There is no explicit "group by" necessary in a criteria query. Certain projection types are defined to be grouping projections, which also appear in the SQL group by clause.

An alias can be assigned to a projection so that the projected value can be referred to in restrictions or orderings. Here are two different ways to do this:

```
List results = session.createCriteria(Cat.class)
    .setProjection( Projections.alias( Projections.groupProperty("color"), "colr" ) )
    .addOrder( Order.asc("colr") )
    .list();
List results = session.createCriteria(Cat.class)
    .setProjection( Projections.groupProperty("color").as("colr") )
    .addOrder( Order.asc("colr") )
    .list();
```

The alias() and as() methods simply wrap a projection instance in another, aliased, instance of Projection. As a shortcut, you can assign an alias when you add the projection to a projection list:

```
List results = session.createCriteria(Cat.class)
    .setProjection( Projections.projectionList()
        .add( Projections.rowCount(), "catCountByColor" )
        .add( Projections.avg("weight"), "avgWeight" )
        .add( Projections.max("weight"), "maxWeight" )
        .add( Projections.groupProperty("color"), "color" )
    )
    .addOrder( Order.desc("catCountByColor") )
    .addOrder( Order.desc("avgWeight") )
    .list();
List results = session.createCriteria(Domestic.class, "cat")
    .createAlias("kittens", "kit")
    .setProjection( Projections.projectionList()
        .add( Projections.property("cat.name"), "catName" )
        .add( Projections.property("kit.name"), "kitName" )
    )
    .addOrder( Order.asc("catName") )
    .addOrder( Order.asc("kitName") )
    .list();
```

You can also use Property.forName() to express projections:

```
List results = session.createCriteria(Cat.class)
    .setProjection( Property.forName("name") )
    .add( Property.forName("color").eq(Color.BLACK) )
    .list();
List results = session.createCriteria(Cat.class)
    .setProjection( Projections.projectionList()
        .add( Projections.rowCount().as("catCountByColor") )
        .add( Property.forName("weight").avg().as("avgWeight") )
        .add( Property.forName("weight").max().as("maxWeight") )
        .add( Property.forName("color").group().as("color" )
    )
    .addOrder( Order.desc("catCountByColor") )
    .addOrder( Order.desc("avgWeight") )
    .list();
```

15.8. Detached queries and subqueries

The DetachedCriteria class allows you to create a query outside the scope of a session and then execute it using an arbitrary Session.

```
DetachedCriteria query = DetachedCriteria.forClass(Cat.class)
    .add( Property.forName("sex").eq('F') );

Session session = ....;
Transaction txn = session.beginTransaction();
List results = query.getExecutableCriteria(session).setMaxResults(100).list();
txn.commit();
session.close();
```

A DetachedCriteria can also be used to express a subquery. Criterion instances involving subqueries can be obtained via Subqueries or Property.

```
DetachedCriteria avgWeight = DetachedCriteria.forClass(Cat.class)
    .setProjection( Property.forName("weight").avg() );
session.createCriteria(Cat.class)
    .add( Property.forName("weight").gt(avgWeight) )
    .list();
DetachedCriteria weights = DetachedCriteria.forClass(Cat.class)
    .setProjection( Property.forName("weight") );
session.createCriteria(Cat.class)
    .add( Subqueries.geAll("weight", weights) )
    .list();
```

Correlated subqueries are also possible:

```
DetachedCriteria avgWeightForSex = DetachedCriteria.forClass(Cat.class, "cat2")
    .setProjection( Property.forName("weight").avg() )
    .add( Property.forName("cat2.sex").eqProperty("cat.sex") );
session.createCriteria(Cat.class, "cat")
    .add( Property.forName("weight").gt(avgWeightForSex) )
    .list();
```

15.9. Queries by natural identifier

For most queries, including criteria queries, the query cache is not efficient because query cache invalidation occurs too frequently. However, there is a special kind of query where you can optimize the cache invalidation algorithm: lookups by a constant natural key. In some applications, this kind of query occurs frequently. The criteria API provides special provision for this use case.

First, map the natural key of your entity using <natural-id> and enable use of the second-level cache.

```
<class name="User">
    <cache usage="read-write"/>
    <id name="id">
        <generator class="increment"/>
    </id>
```

```
    <natural-id>
        <property name="name"/>
        <property name="org"/>
    </natural-id>
    <property name="password"/>
</class>
```

This functionality is not intended for use with entities with mutable natural keys.

Once you have enabled the Hibernate query cache, the Restrictions.naturalId() allows you to make use of the more efficient cache algorithm.

```
session.createCriteria(User.class)
    .add( Restrictions.naturalId()
        .set("name", "gavin")
        .set("org", "hb")
    ).setCacheable(true)
    .uniqueResult();
```

Tárolt eljárások

Date and time

A query.setDate() metódus az órát le fogja vágni a dátumról. Ha az órát is hozzá akarjuk rakni, akkor a query.setTimestamp() metódust kell használni, aminek ugyan úgy át lehet adni a java.util.Date osztályt.

```
query.setTimestamp("dateOfQuery", dateOfQuery);
```