**Java Libraries - Projection in hql**

Copy JAR files which are listed below:

antlr-2.7.7.jar

classmate-1.3.4.jar

commons-lang3-3.6.jar

commons-logging-1.1.3.jar

dom4j-1.6.1.jar

ehcache-core-2.6.11.jar

geolatte-geom-1.1.0.jar

hibernate-commons-annotations-5.0.1.Final.jar

hibernate-core-5.2.11.Final.jar

hibernate-ehcache-5.2.12.Final.jar

hibernate-ejb3-persistence.jar

hibernate-enhance-maven-plugin-4.3.7.Final.jar

hibernate-entitymanager.jar

hibernate-java8-5.2.11.Final.jar

hibernate-jpa-2.1-api-1.0.0.Final.jar

hibernate-spatial-5.2.11.Final.jar

hibernate-validator-6.0.2.Final.jar

javassist-3.16.1-GA.jar

jboss-logging-3.3.1.Final.jar

jboss-transaction-api\_1.1\_spec-1.0.1.Final.jar

jts-1.11.jar

mysql-connector-java-5.1.36.jar

slf4j-api-1.7.21.jar

**Create Database**

Create a database with the name is **hibernate5**. This database have 2 tables: **Category table** and **Product table**. **Category table** and **Product table** have a **One to Many**. One category can have many products and One product belongs to one and only one category.

--

-- Table structure for table `category`

--

CREATE TABLE `category` (

`id` int(11) NOT NULL PRIMARY KEY AUTO\_INCREMENT,

`name` varchar(250) NOT NULL

) ENGINE=InnoDB DEFAULT CHARSET=latin1;

--

-- Dumping data for table `category`

--

INSERT INTO `category` (`name`) VALUES('Mobile');

INSERT INTO `category` (`name`) VALUES('Computer');

INSERT INTO `category` (`name`) VALUES('Laptop');

--

-- Table structure for table `product`

--

CREATE TABLE `product` (

`id` int(11) NOT NULL PRIMARY KEY AUTO\_INCREMENT,

`name` varchar(250) COLLATE utf8\_unicode\_ci NOT NULL,

`price` decimal(10,1) NOT NULL,

`quantity` int(11) NOT NULL,

`description` text COLLATE utf8\_unicode\_ci NOT NULL,

`photo` varchar(250) COLLATE utf8\_unicode\_ci NOT NULL,

`featured` tinyint(1) NOT NULL,

`categoryid` int(11) NOT NULL,

FOREIGN KEY (`categoryid`) REFERENCES `category` (`id`)

) ENGINE=InnoDB DEFAULT CHARSET=utf8 COLLATE=utf8\_unicode\_ci;

--

-- Dumping data for table `product`

--

INSERT INTO `product` (`name`, `price`, `quantity`, `description`, `photo`, `categoryid`, `featured`) VALUES('Mobile 1', '2.0', 2, 'description 1', 'thumb1.gif', 1, 0);

INSERT INTO `product` (`name`, `price`, `quantity`, `description`, `photo`, `categoryid`, `featured`) VALUES('Mobile 2', '1.0', 5, 'description 2', 'thumb2.gif', 1, 1);

INSERT INTO `product` (`name`, `price`, `quantity`, `description`, `photo`, `categoryid`, `featured`) VALUES('Mobile 3', '3.0', 9, 'description 3', 'thumb3.gif', 1, 0);

INSERT INTO `product` (`name`, `price`, `quantity`, `description`, `photo`, `categoryid`, `featured`) VALUES('Computer 1', '5.0', 12, 'description 4', 'thumb1.gif', 2, 1);

INSERT INTO `product` (`name`, `price`, `quantity`, `description`, `photo`, `categoryid`, `featured`) VALUES('Computer 2', '7.0', 5, 'description 5', 'thumb1.gif', 2, 0);

INSERT INTO `product` (`name`, `price`, `quantity`, `description`, `photo`, `categoryid`, `featured`) VALUES('Computer 3', '12.0', 2, 'description 6', 'thumb2.gif', 2, 1);

INSERT INTO `product` (`name`, `price`, `quantity`, `description`, `photo`, `categoryid`, `featured`) VALUES('Laptop 1', '3.0', 8, 'description 7', 'thumb2.gif', 3, 0);

INSERT INTO `product` (`name`, `price`, `quantity`, `description`, `photo`, `categoryid`, `featured`) VALUES('Laptop 2', '4.0', 11, 'description 8', 'thumb3.gif', 3, 1);

INSERT INTO `product` (`name`, `price`, `quantity`, `description`, `photo`, `categoryid`, `featured`) VALUES('Laptop 3', '2.0', 15, 'description 9', 'thumb2.gif', 3, 0);

***Category Table***

***Product Table***

**Entities Class**

Create three entities classes – **Category.java**, **Product.java** and **ProductEntity.java**, to represent the above tables

***Category.java***

package entities;

import java.util.HashSet;

import java.util.Set;

import javax.persistence.Column;

import javax.persistence.Entity;

import javax.persistence.FetchType;

import javax.persistence.GeneratedValue;

import static javax.persistence.GenerationType.IDENTITY;

import javax.persistence.Id;

import javax.persistence.OneToMany;

import javax.persistence.Table;

@Entity

@Table(name = "category")

public class Category implements java.io.Serializable {

private Integer id;

private String name;

private Set<Product> products = new HashSet<Product>(0);

public Category() {

}

public Category(String name) {

this.name = name;

}

public Category(String name, Set<Product> products) {

this.name = name;

this.products = products;

}

@Id

@GeneratedValue(strategy = IDENTITY)

@Column(name = "id", unique = true, nullable = false)

public Integer getId() {

return this.id;

}

public void setId(Integer id) {

this.id = id;

}

@Column(name = "name", nullable = false, length = 250)

public String getName() {

return this.name;

}

public void setName(String name) {

this.name = name;

}

@OneToMany(fetch = FetchType.LAZY, mappedBy = "category")

public Set<Product> getProducts() {

return this.products;

}

public void setProducts(Set<Product> products) {

this.products = products;

}

}

***Product.java***

package entities;

import java.math.BigDecimal;

import javax.persistence.Column;

import javax.persistence.Entity;

import javax.persistence.FetchType;

import javax.persistence.GeneratedValue;

import static javax.persistence.GenerationType.IDENTITY;

import javax.persistence.Id;

import javax.persistence.JoinColumn;

import javax.persistence.ManyToOne;

import javax.persistence.Table;

@Entity

@Table(name = "product")

public class Product implements java.io.Serializable {

private Integer id;

private String name;

private BigDecimal price;

private int quantity;

private String description;

private String photo;

private boolean featured;

private Category category;

public Product() {

}

public Product(Integer id, String name, BigDecimal price) {

super();

this.id = id;

this.name = name;

this.price = price;

}

@Id

@GeneratedValue(strategy = IDENTITY)

@Column(name = "id", unique = true, nullable = false)

public Integer getId() {

return this.id;

}

public void setId(Integer id) {

this.id = id;

}

@Column(name = "name", nullable = false, length = 250)

public String getName() {

return this.name;

}

public void setName(String name) {

this.name = name;

}

@Column(name = "price", nullable = false, precision = 10, scale = 1)

public BigDecimal getPrice() {

return this.price;

}

public void setPrice(BigDecimal price) {

this.price = price;

}

@Column(name = "quantity", nullable = false)

public int getQuantity() {

return this.quantity;

}

public void setQuantity(int quantity) {

this.quantity = quantity;

}

@Column(name = "description", nullable = false, length = 65535)

public String getDescription() {

return this.description;

}

public void setDescription(String description) {

this.description = description;

}

@Column(name = "photo", nullable = false, length = 250)

public String getPhoto() {

return this.photo;

}

public void setPhoto(String photo) {

this.photo = photo;

}

@Column(name = "featured", nullable = false)

public boolean isFeatured() {

return this.featured;

}

public void setFeatured(boolean featured) {

this.featured = featured;

}

@ManyToOne(fetch = FetchType.LAZY)

@JoinColumn(name = "categoryid", nullable = false)

public Category getCategory() {

return category;

}

public void setCategory(Category category) {

this.category = category;

}

}

***ProductEntity.java***

package entities;

import java.math.BigDecimal;

public class ProductEntity implements java.io.Serializable {

private Integer id;

private String name;

private BigDecimal price;

public Integer getId() {

return id;

}

public void setId(Integer id) {

this.id = id;

}

public String getName() {

return name;

}

public void setName(String name) {

this.name = name;

}

public BigDecimal getPrice() {

return price;

}

public void setPrice(BigDecimal price) {

this.price = price;

}

public ProductEntity(Integer id, String name, BigDecimal price) {

super();

this.id = id;

this.name = name;

this.price = price;

}

public ProductEntity() {

super();

}

}

**Hibernate Configuration File**

Puts Category.java and Product.java in your Hibernate configuration file, and also MySQL connection details.

<?xml version="1.0" encoding="UTF-8"?>

<!DOCTYPE hibernate-configuration PUBLIC "-//Hibernate/Hibernate Configuration DTD 3.0//EN" "<http://hibernate.sourceforge.net/hibernate-configuration-3.0.dtd>">

<hibernate-configuration>

<session-factory>

<property name="hibernate.enable\_lazy\_load\_no\_trans">true</property>

<property name="hibernate.connection.driver\_class">com.mysql.jdbc.Driver</property>

<property name="hibernate.connection.password">123456</property>

<property name="hibernate.connection.url">jdbc:mysql://localhost:3306/hibernate5</property>

<property name="hibernate.connection.username">root</property>

<property name="hibernate.dialect">org.hibernate.spatial.dialect.mysql.MySQLSpatialDialect</property>

<property name="hibernate.current\_session\_context\_class">thread</property>

<mapping class="entities.Product" />

<mapping class="entities.Category" />

</session-factory>

</hibernate-configuration>

**Create HibernateUtil class**

The HibernateUtil class helps in creating the SessionFactory from the Hibernate configuration file. The SessionFactory is threadsafe, so it is not necessary to obtain one for each thread.

package hibernate\_query\_language;

import org.hibernate.\*;

import org.hibernate.boot.\*;

import org.hibernate.boot.registry.\*;

public class HibernateUtil {

private static final SessionFactory sessionFactory;

static {

try {

StandardServiceRegistry standardRegistry = new

StandardServiceRegistryBuilder()

.configure("hibernate.cfg.xml")

.build();

Metadata metaData = new MetadataSources(

standardRegistry)

.getMetadataBuilder()

.build();

sessionFactory = metaData.getSessionFactoryBuilder().build();

} catch (Throwable th) {

throw new ExceptionInInitializerError(th);

}

}

public static SessionFactory getSessionFactory() {

return sessionFactory;

}

}

**Create ProductModel class**

The ProductModel class contains methods to interact with the database.

package hibernate\_query\_language;

import java.util.List;

import org.hibernate.\*;

import entities.ProductEntity;

public class ProductModel {

private SessionFactory sessionFactory = HibernateUtil.getSessionFactory();

public List<ProductEntity> projection() {

List<ProductEntity> products = null;

Session session = null;

Transaction transaction = null;

try {

session = sessionFactory.openSession();

transaction = session.beginTransaction();

org.hibernate.query.Query query = session.createQuery("select new entities.ProductEntity(p.id, p.name, p.price) from Product p");

products = query.getResultList();

transaction.commit();

} catch (Exception e) {

products = null;

if (transaction != null) {

transaction.rollback();

}

} finally {

session.close();

}

return products;

}

}

**Run It**

package hibernate\_query\_language;

import entities.ProductEntity;

public class Main {

public static void main(String[] args) {

ProductModel productModel = new ProductModel();

for(ProductEntity productEntity : productModel.projection()) {

System.out.println("Id: " + productEntity.getId());

System.out.println("Name: " + productEntity.getName());

System.out.println("Price: " + productEntity.getPrice());

System.out.println("=======================");

}

}

}

**Output**

Id: 1

Name: Mobile 1

Price: 2.0

=======================

Id: 2

Name: Mobile 2

Price: 1.0

=======================

Id: 3

Name: Mobile 3

Price: 3.0

=======================

Id: 4

Name: Computer 1

Price: 5.0

=======================

Id: 5

Name: Computer 2

Price: 7.0

=======================

Id: 6

Name: Computer 3

Price: 12.0

=======================

Id: 7

Name: Laptop 1

Price: 3.0

=======================

Id: 12

Name: Laptop 2

Price: 4.0

=======================

Id: 13

Name: Laptop 3

Price: 2.0

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