Source Code:

DROP TABLE IF EXISTS `colors`;

​/\*!40101 SET @saved\_cs\_client = @@character\_set\_client \*/;

​/\*!40101 SET character\_set\_client = utf8 \*/;

​CREATE TABLE `colors` (

​ `ID` bigint(20) NOT NULL AUTO\_INCREMENT,

​ `color\_name` varchar(40) DEFAULT NULL,

​ `idx` int(11) DEFAULT NULL,

​ `product\_id` bigint(20) DEFAULT NULL,

​ PRIMARY KEY (`ID`)

​) ENGINE=InnoDB AUTO\_INCREMENT=6 DEFAULT CHARSET=latin1;

​/\*!40101 SET character\_set\_client = @saved\_cs\_client \*/;

​

​

​LOCK TABLES `colors` WRITE;

​/\*!40000 ALTER TABLE `colors` DISABLE KEYS \*/;

​INSERT INTO `colors` VALUES (1,'Red',0,1),(2,'Silver',1,1),(3,'Gray',0,2),(4,'White',1,2),(5,'Maroon',0,3);•​/\*!40000 ALTER TABLE `colors` ENABLE KEYS \*/;

​UNLOCK TABLES;

​

​--

​-- Table structure for table `eproduct`

​--

​

​DROP TABLE IF EXISTS `eproduct`;

​/\*!40101 SET @saved\_cs\_client = @@character\_set\_client \*/;

​/\*!40101 SET character\_set\_client = utf8 \*/;

​CREATE TABLE `eproduct` (

​ `ID` bigint(20) NOT NULL AUTO\_INCREMENT,

​ `name` varchar(100) DEFAULT NULL,

​ `price` decimal(10,2) DEFAULT NULL,

​ `date\_added` timestamp NOT NULL DEFAULT CURRENT\_TIMESTAMP,

​ PRIMARY KEY (`ID`)

​) ENGINE=InnoDB AUTO\_INCREMENT=4 DEFAULT CHARSET=latin1;

​/\*!40101 SET character\_set\_client = @saved\_cs\_client \*/;

​

​

​LOCK TABLES `eproduct` WRITE;

​/\*!40000 ALTER TABLE `eproduct` DISABLE KEYS \*/;

​INSERT INTO `eproduct` VALUES (1,'HP Laptop ABC',21900.00,'2019-06-04 07:18:57'),(2,'Acer Laptop ABC',23300.00,'2019-06-04 07:19:07'),(3,'Lenovo Laptop ABC',33322.00,'2019-06-04 07:19:19');

​/\*!40000 ALTER TABLE `eproduct` ENABLE KEYS \*/;

​UNLOCK TABLES;

​

​

​DROP TABLE IF EXISTS `finance`;

​/\*!40101 SET @saved\_cs\_client = @@character\_set\_client \*/;

​/\*!40101 SET character\_set\_client = utf8 \*/;

​CREATE TABLE `finance` (

​ `ID` bigint(20) NOT NULL AUTO\_INCREMENT,

​ `ftype` varchar(10) DEFAULT NULL,

​ `name` varchar(30) DEFAULT NULL,

​ `product\_id` bigint(20) DEFAULT NULL,

​ PRIMARY KEY (`ID`)

​) ENGINE=InnoDB AUTO\_INCREMENT=6 DEFAULT CHARSET=latin1;

​/\*!40101 SET character\_set\_client = @saved\_cs\_client \*/;

​

​

​LOCK TABLES `finance` WRITE;

​/\*!40000 ALTER TABLE `finance` DISABLE KEYS \*/;

​INSERT INTO `finance` VALUES (1,'CREDITCARD','EMI on Citibank Card',1),(3,'BANK','40% finance from SBI',2),(4,'BANK','60% finance from ICICI',3),(5,'BANK','20% finance from ICICI',1);

​/\*!40000 ALTER TABLE `finance` ENABLE KEYS \*/;

​UNLOCK TABLES;

​

​

​DROP TABLE IF EXISTS `os`;

​/\*!40101 SET @saved\_cs\_client = @@character\_set\_client \*/;

​/\*!40101 SET character\_set\_client = utf8 \*/;

​CREATE TABLE `os` (

​ `ID` bigint(20) NOT NULL AUTO\_INCREMENT,

​ `name` varchar(30) DEFAULT NULL,

​ `product\_id` bigint(20) DEFAULT NULL,

​ PRIMARY KEY (`ID`)

​) ENGINE=InnoDB AUTO\_INCREMENT=6 DEFAULT CHARSET=latin1;

​/\*!40101 SET character\_set\_client = @saved\_cs\_client \*/;

​

​

​LOCK TABLES `os` WRITE;

​/\*!40000 ALTER TABLE `os` DISABLE KEYS \*/;

​INSERT INTO `os` VALUES (1,'Windows 10',1),(2,'Windows 10',2),(3,'FreeDOS',2),(4,'RedHat Linux',2),(5,'Windows 10',3);

​/\*!40000 ALTER TABLE `os` ENABLE KEYS \*/;

​UNLOCK TABLES;

​

​

​DROP TABLE IF EXISTS `screensizes`;

​/\*!40101 SET @saved\_cs\_client = @@character\_set\_client \*/;

​/\*!40101 SET character\_set\_client = utf8 \*/;

​CREATE TABLE `screensizes` (

​ `ID` bigint(20) NOT NULL AUTO\_INCREMENT,

​ `size` varchar(10) DEFAULT NULL,

​ `product\_id` bigint(20) DEFAULT NULL,

​ PRIMARY KEY (`ID`)

​) ENGINE=InnoDB AUTO\_INCREMENT=5 DEFAULT CHARSET=latin1;

​/\*!40101 SET character\_set\_client = @saved\_cs\_client \*/;

​

​

​LOCK TABLES `screensizes` WRITE;

​/\*!40000 ALTER TABLE `screensizes` DISABLE KEYS \*/;

​INSERT INTO `screensizes` VALUES (1,'12 in',1),(2,'14.5 in',2),(3,'14.9 in',2),(4,'15.5 in',3);

​/\*!40000 ALTER TABLE `screensizes` ENABLE KEYS \*/;

​UNLOCK TABLES;

package com.ecommerce;

public class Color {

private long COLORID;

private String name;

public Color() {

}

public Color(String name) {

this.COLORID = 0;

this.name = name;

}

public long getCOLORID() {return this.COLORID; }

public String getName() { return this.name;}

public void setCOLORID(long id) { this.COLORID = id;}

public void setName(String name) { this.name = name;}

}

package com.ecommerce;

import java.math.BigDecimal;

import java.util.Collection;

import java.util.Date;

import java.util.List;

import java.util.Set;

import java.util.Map;

public class EProduct {

private long ID;

private String name;

private BigDecimal price;

private Date dateAdded;

private List<Color> colors;

private Set<Finance> finance;

private PDescription pdescrip;

public EProduct() {

}

public long getID() {return this.ID; }

public String getName() { return this.name;}

public BigDecimal getPrice() { return this.price;}

public Date getDateAdded() { return this.dateAdded;}

public List<Color> getColors() { return this.colors;}

public Set<Finance> getFinance() { return this.finance;}

public PDescription getPdescrip() { return this.pdescrip;}

public void setID(long id) { this.ID = id;}

public void setName(String name) { this.name = name;}

public void setPrice(BigDecimal price) { this.price = price;}

public void setDateAdded(Date date) { this.dateAdded = date;}

public void setColors(List<Color> colors) { this.colors = colors;}

public void setFinance(Set<Finance> finance) { this.finance = finance;}

public void setPdescrip(PDescription pdescrip) { this.pdescrip = pdescrip;}

}

package com.ecommerce;

public class Finance {

private long FINANCEID;

private String name;

private String ftype;

public Finance() {

}

public Finance(String name, String ftype) {

this.FINANCEID = 0;

this.name = name;

this.ftype = ftype;

}

public long getFINANCEID() {return this.FINANCEID; }

public String getName() { return this.name;}

public String getFtype() { return this.ftype;}

public void setFINANCEID(long id) { this.FINANCEID = id;}

public void setName(String name) { this.name = name;}

public void setFtype(String ftype) { this.ftype= ftype;}

}

package com.ecommerce;

public class OS {

private long OSID;

private String name;

public OS() {

}

public OS(String name) {

this.OSID = 0;

this.name = name;

}

public long getOSID() {return this.OSID; }

public String getName() { return this.name;}

public void setOSID(long id) { this.OSID = id;}

public void setName(String name) { this.name= name;}

}

package com.ecommerce;

public class ScreenSizes {

private long SCREENID;

private String size;

public ScreenSizes() {

}

public ScreenSizes(String size) {

this.SCREENID = 0;

this.size = size;

}

public long getSCREENID() {return this.SCREENID; }

public String getSize() { return this.size;}

public void setSCREENID(long id) { this.SCREENID = id;}

public void setSize(String size) { this.size = size;}

}

package com.ecommerce;

import org.hibernate.SessionFactory;

import org.hibernate.boot.Metadata;

import org.hibernate.boot.MetadataSources;

import org.hibernate.boot.registry.StandardServiceRegistry;

import org.hibernate.boot.registry.StandardServiceRegistryBuilder;

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;

}

}

<?xml version="1.0"?>

<!DOCTYPE hibernate-mapping PUBLIC

"-//Hibernate/Hibernate Mapping DTD 3.0//EN"

"http://www.hibernate.org/dtd/hibernate-mapping-3.0.dtd">

<hibernate-mapping package="com.ecommerce">

<class name="Color" table="colors">

<id name="COLORID" type="long" column="ID">

<generator class="identity"/>

</id>

<property name="name" type="string" column="COLOR\_NAME"/>

</class>

</hibernate-mapping>

<?xml version="1.0"?>

<!DOCTYPE hibernate-mapping PUBLIC

"-//Hibernate/Hibernate Mapping DTD 3.0//EN"

"http://www.hibernate.org/dtd/hibernate-mapping-3.0.dtd">

<hibernate-mapping package="com.ecommerce">

<class name="EProduct" table="eproduct">

<id name="ID" type="long" column="ID">

<generator class="identity"/>

</id>

<property name="name" type="string" column="NAME"/>

<property name="price" type="big\_decimal" column="PRICE"/>

<property name="dateAdded" type="timestamp" column="DATE\_ADDED"/>

<list name="colors" cascade="all" lazy="true">

<key column="product\_id" />

<list-index column="idx" />

<one-to-many class="com.ecommerce.Color" />

</list>

<bag name="screensizes" cascade="all" lazy="true">

<key column="product\_id"></key>

<one-to-many class="com.ecommerce.ScreenSizes"/>

</bag>

<set name = "os" cascade="all" lazy=”true”>

<key column = "product\_id"/>

<one-to-many class="OS"/>

</set>

<map name = "finance" cascade="all">

<key column = "product\_id"/>

<index column = "ftype" type = "string"/>

<one-to-many class="com.ecommerce.Finance"/>

</map>

</class>

</hibernate-mapping>

<?xml version="1.0"?>

<!DOCTYPE hibernate-mapping PUBLIC

"-//Hibernate/Hibernate Mapping DTD 3.0//EN"

"http://www.hibernate.org/dtd/hibernate-mapping-3.0.dtd">

<hibernate-mapping package="com.ecommerce">

<class name="Finance" table="finance">

<id name="FINANCEID" type="long" column="ID">

<generator class="identity"/>

</id>

<property name="name" type="string" column="NAME"/>

<property name="ftype" type="string" column="FTYPE"/>

</class>

</hibernate-mapping>

<?xml version="1.0"?>

<!DOCTYPE hibernate-mapping PUBLIC

"-//Hibernate/Hibernate Mapping DTD 3.0//EN"

"http://www.hibernate.org/dtd/hibernate-mapping-3.0.dtd">

<hibernate-mapping package="com.ecommerce">

<class name="OS" table="os">

<id name="OSID" type="long" column="ID">

<generator class="identity"/>

</id>

<property name="name" type="string" column="NAME"/>

</class>

</hibernate-mapping>

<?xml version="1.0"?>

<!DOCTYPE hibernate-mapping PUBLIC

"-//Hibernate/Hibernate Mapping DTD 3.0//EN"

"http://www.hibernate.org/dtd/hibernate-mapping-3.0.dtd">

<hibernate-mapping package="com.ecommerce">

<class name="ScreenSizes" table="screensizes">

<id name="SCREENID" type="long" column="ID">

<generator class="identity"/>

</id>

<property name="size" type="string" column="SIZE"/>

</class>

</hibernate-mapping>

<?xml version='1.0' encoding='utf-8'?>

<!DOCTYPE hibernate-configuration PUBLIC

"-//Hibernate/Hibernate Configuration DTD 3.0//EN"

"http://www.hibernate.org/dtd/hibernate-configuration-3.0.dtd">

<hibernate-configuration>

<session-factory>

<!-- Database connection settings -->

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

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

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

<property name="connection.password">Guru</property>

<mapping resource="com/ecommerce/EProduct.hbm.xml"/>

<mapping resource="com/ecommerce/Color.hbm.xml"/>

<mapping resource="com/ecommerce/ScreenSizes.hbm.xml"/>

<mapping resource="com/ecommerce/Os.hbm.xml"/>

<mapping resource="com/ecommerce/Finance.hbm.xml"/>

</session-factory>

</hibernate-configuration>

<!DOCTYPE html>

<html>

<head>

<meta charset="UTF-8">

<title>Hibernate Collection Mapping With XML</title>

</head>

<body>

<a href="details">Product Details</a><br>

</body>

</html>

import java.io.IOException;

import java.io.PrintWriter;

import javax.servlet.ServletConfig;

import javax.servlet.ServletException;

import javax.servlet.annotation.WebServlet;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;

import javax.transaction.\*;

import javax.xml.bind.\*;

import java.io.Serializable;

import java.math.BigDecimal;

import java.util.ArrayList;

import java.util.Calendar;

import java.util.Collection;

import java.util.List;

import java.util.Map;

import java.util.Set;

import org.hibernate.Session;

import org.hibernate.SessionFactory;

import org.hibernate.Transaction;

import org.hibernate.cfg.Configuration;

import com.ecommerce.Color;

import com.ecommerce.EProduct;

import com.ecommerce.Finance;

import com.ecommerce.HibernateUtil;

import com.ecommerce.PDescription;

/\*\*

\* Servlet implementation class ProductDetails

\*/

@WebServlet("/ProductDetails")

public class ProductDetails extends HttpServlet {

private static final long serialVersionUID = 1L;

/\*\*

\* @see HttpServlet#HttpServlet()

\*/

public ProductDetails() {

super();

// TODO Auto-generated constructor stub

}

/\*\*

\* @see HttpServlet#doGet(HttpServletRequest request, HttpServletResponse response)

\*/

protected void doGet(HttpServletRequest request, HttpServletResponse response) throws ServletException, IOException {

// TODO Auto-generated method stub

try {

SessionFactory factory = HibernateUtil.getSessionFactory();

Session session = factory.openSession();

List<EProduct> list = session.createQuery("from EProduct").list();

PrintWriter out = response.getWriter();

out.println("<html><body>");

out.println("<b>One to One Mapping</b><br>");

for(EProduct p: list) {

out.println("ID: " + String.valueOf(p.getID()) + ", Name: " + p.getName() +

", Price: " + String.valueOf(p.getPrice()) + ", Date Added: " + p.getDateAdded().toString());

PDescription descrip = p.getPdescrip();

out.println("<br>Description:" + descrip.getDescrip());

out.println("<hr>");

}

out.println("<b>One to Many and Many to One Mapping</b><br>");

for(EProduct p: list) {

out.println("ID: " + String.valueOf(p.getID()) + ", Name: " + p.getName() +

", Price: " + String.valueOf(p.getPrice()) + ", Date Added: " + p.getDateAdded().toString());

List<Color> colors = p.getColors();

out.println("<br>Colors: <ul>");

for(Color c: colors) {

out.print("<li>" + c.getName() + "</li>");

}

out.println("</ul>");

out.println("<hr>");

}

out.println("<b>Many to Many Mapping</b><br>");

for(EProduct p: list) {

out.println("ID: " + String.valueOf(p.getID()) + ", Name: " + p.getName() +

", Price: " + String.valueOf(p.getPrice()) + ", Date Added: " + p.getDateAdded().toString());

Set<Finance> finances= p.getFinance();

out.println("<br>Finance Options : <ul>");

for(Finance f: finances) {

out.print("<li>" + f.getFtype() + "</li>");

}

out.println("</ul>");

out.println("<hr>");

}

session.close();

out.println("</body></html>");

} catch (Exception ex) {

throw ex;

}

}

/\*\*

\* @see HttpServlet#doPost(HttpServletRequest request, HttpServletResponse response)

\*/

protected void doPost(HttpServletRequest request, HttpServletResponse response) throws ServletException, IOException {

// TODO Auto-generated method stub

doGet(request, response);

}

}

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

<web-app xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns="http://xmlns.jcp.org/xml/ns/javaee" xsi:schemaLocation="http://xmlns.jcp.org/xml/ns/javaee http://xmlns.jcp.org/xml/ns/javaee/web-app\_4\_0.xsd" id="WebApp\_ID" version="4.0">

<display-name>HibernateLazyCollections</display-name>

<welcome-file-list>

<welcome-file>index.html</welcome-file>

<welcome-file>index.htm</welcome-file>

<welcome-file>index.jsp</welcome-file>

<welcome-file>default.html</welcome-file>

<welcome-file>default.htm</welcome-file>

<welcome-file>default.jsp</welcome-file>

</welcome-file-list>

<servlet>

<servlet-name>ProductDetails</servlet-name>

<servlet-class>ProductDetails</servlet-class>

</servlet>

<servlet-mapping>

<servlet-name>ProductDetails</servlet-name>

<url-pattern>/details</url-pattern>

</servlet-mapping>

</web-app>

