**Phase 2:Practice Project: Assissted Practice: 3**

**7. Demonstrate component mapping in Hibernate.**

**Source Code:**

**Index.html:**

<!DOCTYPEhtml>

<html>

<head>

<metacharset=*"ISO-8859-1"*>

<title>Component Mapping</title>

</head>

<body>

<formaction=*"ComponentMappingServlet"*method=*"get"*>

<inputtype=*"submit"*value=*"Fetch"*/>

</form>

</body>

</html>

**Course:**

**package**com.models;

**import**java.util.List;

**import**javax.persistence.CascadeType;

**import**javax.persistence.Entity;

**import**javax.persistence.GeneratedValue;

**import**javax.persistence.GenerationType;

**import**javax.persistence.Id;

**import**javax.persistence.JoinColumn;

**import**javax.persistence.OneToMany;

**import**javax.persistence.PrimaryKeyJoinColumn;

**import**javax.persistence.Table;

@Entity

@Table(name = "courses")

**publicclass** Course {

@Id

@GeneratedValue(strategy = GenerationType.***IDENTITY***)

**privateint**courseId;

**private** String name;

@OneToMany(targetEntity = Student.**class**, cascade = CascadeType.***ALL***)

@JoinColumn(name = "courseId")

**private** List<Student>students;

**privatedouble**fees;

**privateint**duration;

**publicint**getCourseId() {

**return**courseId;

}

**publicvoid**setCourseId(**int**courseId) {

**this**.courseId = courseId;

}

**public** String getName() {

**return**name;

}

**publicvoid**setName(String name) {

**this**.name = name;

}

**public** List<Student>getStudents() {

**return**students;

}

**publicvoid**setStudents(List<Student>students) {

**this**.students = students;

}

**publicdouble**getFees() {

**return**fees;

}

**publicvoid**setFees(**double**fees) {

**this**.fees = fees;

}

**publicint**getDuration() {

**return**duration;

}

**publicvoid**setDuration(**int**duration) {

**this**.duration = duration;

}

@Override

**public** String toString() {

**return**"Course [courseId=" + courseId + ", name=" + name + ", students=" + students + ", fees=" + fees

+ ", duration=" + duration + "]";

}

}

**Student:**

**package**com.models;

**import**javax.persistence.Entity;

**import**javax.persistence.GeneratedValue;

**import**javax.persistence.GenerationType;

**import**javax.persistence.Id;

**import**javax.persistence.Table;

@Entity

@Table(name = "students")

**publicclass**Student {

@Id

@GeneratedValue(strategy = GenerationType.***IDENTITY***)

**privateint**rollNo;

**private** String studentName;

**privateint**age;

**publicint**getRollNo() {

**return**rollNo;

}

**publicvoid**setRollNo(**int**rollNo) {

**this**.rollNo = rollNo;

}

**public** String getStudentName() {

**return**studentName;

}

**publicvoid**setStudentName(String studentName) {

**this**.studentName = studentName;

}

**publicint**getAge() {

**return**age;

}

**publicvoid**setAge(**int**age) {

**this**.age = age;

}

@Override

**public** String toString() {

**return**"Student [Roll No=" + rollNo + ", studentName=" + studentName + ", age=" + age + "]";

}

}

**hibernate.cfg.xml:**

<?xmlversion=*"1.0"*encoding=*"utf-8"*?>

<!DOCTYPEhibernate-configurationPUBLIC

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

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

<hibernate-configuration>

<session-factory>

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

<propertyname=*"hibernate.connection.url"*>jdbc:mysql://localhost:3306/dummydemodb</property>

<propertyname=*"hibernate.connection.username"*>student</property>

<propertyname=*"hibernate.connection.password"*>student</property>

<propertyname=*"hibernate.dialect"*>org.hibernate.dialect.MySQL5Dialect</property>

<propertyname=*"show\_sql"*>true</property>

<propertyname=*"hbm2ddl.auto"*>update</property>

<mappingclass=*"com.models.Course"*/>

<mappingclass=*"com.models.Student"*/>

</session-factory>

</hibernate-configuration>

**HibernateConnection:**

**package**com.connection;

**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;

**publicclass**HibernateConnection {

**privatestatic**SessionFactorysessionFactory;

**publicstatic**SessionFactorygetSessionFactory() {

**if**(sessionFactory == **null**) {

**try** {

StandardServiceRegistrystandardRegistry = **new**StandardServiceRegistryBuilder()

.configure("hibernate.cfg.xml").build();

Metadata metadata = **new**MetadataSources(standardRegistry).getMetadataBuilder().build();

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

} **catch** (Exception e) {

e.printStackTrace();

}

}

**return**sessionFactory;

}

}

**ComponentMappingServlet:**

**import**java.io.IOException;

**import**java.io.PrintWriter;

**import**java.util.ArrayList;

**import**java.util.List;

**import**javax.persistence.TypedQuery;

**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**org.hibernate.Session;

**import**org.hibernate.SessionFactory;

**import**org.hibernate.Transaction;

**import**com.connection.HibernateConnection;

**import**com.models.Course;

**import**com.models.Student;

@WebServlet("/ComponentMappingServlet")

**publicclass**ComponentMappingServlet**extends**HttpServlet {

**privatestatic**SessionFactory*sessionFactory* = **null**;

**privatestaticfinallong*serialVersionUID*** = 1L;

**public**ComponentMappingServlet() {

**super**();

*sessionFactory* = HibernateConnection.*getSessionFactory*();

}

**protectedvoid**service(HttpServletRequestrequest, HttpServletResponseresponse)

**throws**ServletException, IOException {

**try** {

response.setContentType("text/html");

PrintWriterout = response.getWriter();

Session session = *sessionFactory*.openSession();

TypedQuery<Course>query = session.createQuery("from Course");

List<Course>cList = query.getResultList();

**for** (Course course :cList) {

out.println("<p><b>Course</b>: " + course.getName() +"</p>");

out.println("<p><b>Course Fees</b>: " + course.getFees() + "</p>");

out.println("<p><b>Course Duration</b>: " + course.getDuration() + "</p>");

out.println("<h2>Students Enrolled: </h2>");

List<Student>studentList = course.getStudents();

**for** (Student std :studentList) {

out.println("<p><b>Roll No: </b>: " + std.getRollNo() + "</p>");

out.println("<p><b>Name: </b>: " + std.getStudentName() + "</p>");

out.println("<p><b>Age: </b>: " + std.getAge() +"</p>");

}

}

session.close();

} **catch** (Exception e) {

e.printStackTrace();

}

}

}