JPA - ENTITY RELATIONSHIPS

This chapter takes you through the relationships between Entities. Generally the relations are more effective between tables in the database. Here the entity classes are treated as relational tables *conceptofJPA*, therefore the relationships between Entity classes are as follows:

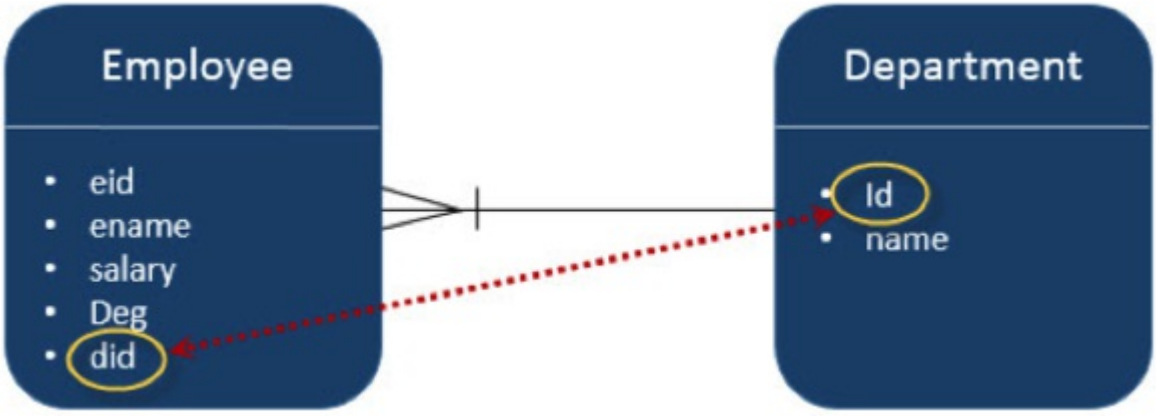
- @ManyToOne Relation
- @OneToMany Relation
- @OneToOne Relation
- @ManyToMany Relation

@ManyToOne Relation

Many-To-One relation between entities: Where one entity *columnorsetofcolumns* is/are referenced with another entity *columnorsetofcolumns* which contain unique values. In relational databases these relations are applicable by using foreign key/primary key between tables.

Let us consider an example of relation between Employee and Department entities. In unidirectional manner, i.e.from Employee to Department, Many-To-One relation is applicable. That means each record of employee contains one department id, which should be a primary key in Department table. Here in the Employee table, Department id is foreign Key.

The diagram explains Many-To-One relation as follows:



Create a JPA project in eclipse IDE named **JPA_Eclipselink_MTO**. All the modules of this project are shown as follows:

Creating Entities

Follow the above given diagram for creating entities. Create a package named **'com.tutorialspoin.eclipselink.entity'** under **'src'** package. Create a class named **Department.java** under given package. The class Department entity is shown as follows:

```
package com.tutorialspoint.eclipselink.entity;

import javax.persistence.Entity;
import javax.persistence.GeneratedValue;
import javax.persistence.GenerationType;
import javax.persistence.Id;

@Entity
public class Department {

   @Id
   @GeneratedValue( strategy=GenerationType.AUTO )

   private int id;
```

```
   private String name;

   public int getId() {
      return id;
   }

   public void setId(int id) {
      this.id = id;
   }

   public String getName( ){
      return name;
   }

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

Create the second entity in this relation - Employee entity class named **Employee.java** under **'com.tutorialspoint.eclipselink.entity'** package. The Employee entity class is shown as follows:

```
package com.tutorialspoint.eclipselink.entity;

import javax.persistence.Entity;
import javax.persistence.GeneratedValue;
import javax.persistence.GenerationType;
import javax.persistence.Id;
import javax.persistence.ManyToOne;

@Entity
public class Employee{

   @Id
   @GeneratedValue( strategy= GenerationType.AUTO )

   private int eid;
   private String ename;
   private double salary;
   private String deg;

   @ManyToOne
   private Department department;

   public Employee(int eid, String ename, double salary, String deg) {
      super( );
      this.eid = eid;
      this.ename = ename;
      this.salary = salary;
      this.deg = deg;
   }

   public Employee( ) {
      super();
   }

   public int getEid( ) {
      return eid;
   }

   public void setEid(int eid)  {
      this.eid = eid;
   }

   public String getEname( ) {
      return ename;
   }
```

```
   public void setEname(String ename) {
      this.ename = ename;
   }

   public double getSalary( ) {
      return salary;
   }

   public void setSalary(double salary) {
      this.salary = salary;
   }

   public String getDeg( ) {
      return deg;
   }

   public void setDeg(String deg) {
      this.deg = deg;
   }

   public Department getDepartment() {
      return department;
   }

   public void setDepartment(Department department) {
      this.department = department;
   }
}
```

Persistence.xml

Persistence.xml file is required to configure the database and the registration of entity classes.

Persitence.xml will be created by the eclipse IDE while creating a JPA Project. The configuration details are user specifications. The persistence.xml file is shown as follows:

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

<persistence version = "2.0"
   xmlns = "http://java.sun.com/xml/ns/persistence"
   xmlns:xsi = "http://www.w3.org/2001/XMLSchema-instance"
   xsi:schemaLocation = "http://java.sun.com/xml/ns/persistence
   http://java.sun.com/xml/ns/persistence/persistence_2_0.xsd">

   <persistence-unit name = "Eclipselink_JPA" transaction-type = "RESOURCE_LOCAL">
      <class>com.tutorialspoint.eclipselink.entity.Employee</class>
      <class>com.tutorialspoint.eclipselink.entity.Department</class>

      <properties>
         <property name = "javax.persistence.jdbc.url" value =
"jdbc:mysql://localhost:3306/jpadb"/>
         <property name = "javax.persistence.jdbc.user" value = "root"/>
         <property name = "javax.persistence.jdbc.password" value="root"/>
         <property name = "javax.persistence.jdbc.driver"
value="com.mysql.jdbc.Driver"/>
         <property name = "eclipselink.logging.level" value = "FINE"/>
         <property name = "eclipselink.ddl-generation" value = "create-tables"/>
      </properties>

   </persistence-unit>
</persistence>
```

Service Classes

This module contains the service classes, which implements the relational part using the attribute initialization. Create a package under **'src'** package named **'com.tutorialspoint.eclipselink.service'**. The DAO class named **ManyToOne.java** is created

under given package. The DAO class is shown as follows:

```
package com.tutorialspointeclipselink.service;

import javax.persistence.EntityManager;
import javax.persistence.EntityManagerFactory;
import javax.persistence.Persistence;

import com.tutorialspoint.eclipselink.entity.Department;
import com.tutorialspoint.eclipselink.entity.Employee;

public class ManyToOne {
   public static void main( String[ ] args ) {

   EntityManagerFactory emfactory = Persistence.createEntityManagerFactory(
"Eclipselink_JPA" );
   EntityManager entitymanager = emfactory.createEntityManager( );
   entitymanager.getTransaction( ).begin( );

   //Create Department Entity
   Department department = new Department();
   department.setName("Development");

   //Store Department
   entitymanager.persist(department);

   //Create Employee1 Entity
   Employee employee1 = new Employee();
   employee1.setEname("Satish");
   employee1.setSalary(45000.0);
   employee1.setDeg("Technical Writer");
   employee1.setDepartment(department);

   //Create Employee2 Entity
   Employee employee2 = new Employee();
   employee2.setEname("Krishna");
   employee2.setSalary(45000.0);
   employee2.setDeg("Technical Writer");
   employee2.setDepartment(department);

   //Create Employee3 Entity
   Employee employee3 = new Employee();
   employee3.setEname("Masthanvali");
   employee3.setSalary(50000.0);
   employee3.setDeg("Technical Writer");
   employee3.setDepartment(department);

   //Store Employees
   entitymanager.persist(employee1);
   entitymanager.persist(employee2);
   entitymanager.persist(employee3);

   entitymanager.getTransaction().commit();
   entitymanager.close();
   emfactory.close();
   }
}
```

After compilation and execution of the above program you will get notifications in the console panel of Eclipse IDE. For output, check MySQL workbench. In this example two tables are created.

Pass the following query in MySQL interface and the result of **Department** table in a tabular format is shown as follows in the query:

```
Select * from department;

Id Name
101 Development
```

Pass the following query in MySQL interface and the result of **Employee** table in a tabular format is shown as follows in the query:

```
Select * from employee;

Eid Deg                  Ename         Salary Department_Id
102 Technical Writer Satish         45000 101
103 Technical Writer Krishna         45000 101
104 Technical Writer Masthan Wali 50000 101
```

In the above table Deparment_Id is the foreign key *referencefield* from Department table.

@OneToMany Relation

In this relationship each row of one entity is referenced to many child records in other entity. The important thing is that child records cannot have multiple parents. In a one-to-many relationship between Table A and Table B, each row in Table A is linked to 0, 1 or many rows in Table B.

Let us consider the above example. If **Employee** and **Department** is in a reverse unidirectional manner, relation is Many-To-One relation. Create a JPA project in eclipse IDE named **JPA_Eclipselink_OTM**. All the modules of this project are shown as follows:

Creating Entities

Follow the above given diagram for creating entities. Create a package named **'com.tutorialspoin.eclipselink.entity'** under **'src'** package. Create a class named **Department.java** under given package. The class Department entity is shown as follows:

```
package com.tutorialspoint.eclipselink.entity;

import java.util.List;
import javax.persistence.Entity;
import javax.persistence.GeneratedValue;
import javax.persistence.GenerationType;
import javax.persistence.Id;
import javax.persistence.OneToMany;

@Entity
public class Department {

    @Id
    @GeneratedValue( strategy=GenerationType.AUTO )

    private int id;
    private String name;

    @OneToMany( targetEntity=Employee.class )
    private List employeelist;

    public int getId() {
     return id;
    }

    public void setId(int id) {
     this.id = id;
    }

    public String getName( ) {
     return name;
    }

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

    public List getEmployeelist() {
```

```
      return employeelist;
    }

   public void setEmployeelist(List employeelist) {
      this.employeelist = employeelist;
   }
}
```

Create the second entity in this relation -Employee entity class, named **Employee.java** under **'com.tutorialspoint.eclipselink.entity'** package. The Employee entity class is shown as follows:

```
package com.tutorialspoint.eclipselink.entity;

import javax.persistence.Entity;
import javax.persistence.GeneratedValue;
import javax.persistence.GenerationType;
import javax.persistence.Id;

@Entity
public class Employee {

   @Id
   @GeneratedValue( strategy= GenerationType.AUTO )

   private int eid;
   private String ename;
   private double salary;
   private String deg;

   public Employee(int eid, String ename, double salary, String deg) {
      super( );
      this.eid = eid;
      this.ename = ename;
      this.salary = salary;
      this.deg = deg;
   }

   public Employee( ) {
      super();
   }

   public int getEid( ) {
      return eid;
   }

   public void setEid(int eid) {
      this.eid = eid;
   }

   public String getEname( ) {
      return ename;
   }

   public void setEname(String ename) {
      this.ename = ename;
   }

   public double getSalary( ) {
      return salary;
   }

   public void setSalary(double salary) {
      this.salary = salary;
   }

   public String getDeg( ) {
      return deg;
   }
```

```
   public void setDeg(String deg) {
      this.deg = deg;
   }
}
```

Persistence.xml

Persistence.xml will be created by the eclipse IDE while creating a JPA Project. The configuration details are user specifications. The persistence.xml file is shown as follows:

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

<persistence version = "2.0" xmlns = "http://java.sun.com/xml/ns/persistence"
   xmlns:xsi = "http://www.w3.org/2001/XMLSchema-instance"
   xsi:schemaLocation = "http://java.sun.com/xml/ns/persistence
   http://java.sun.com/xml/ns/persistence/persistence_2_0.xsd">

   <persistence-unit name = "Eclipselink_JPA" transaction-type = "RESOURCE_LOCAL">
      <class>com.tutorialspoint.eclipselink.entity.Employee</class>
      <class>com.tutorialspoint.eclipselink.entity.Department</class>

      <properties>
         <property name = "javax.persistence.jdbc.url" value =
"jdbc:mysql://localhost:3306/jpadb"/>
         <property name = "javax.persistence.jdbc.user" value = "root"/>
         <property name = "javax.persistence.jdbc.password" value = "root"/>
         <property name = "javax.persistence.jdbc.driver" value =
"com.mysql.jdbc.Driver"/>
         <property name = "eclipselink.logging.level" value = "FINE"/>
         <property name = "eclipselink.ddl-generation" value = "create-tables"/>
      </properties>

   </persistence-unit>
</persistence>
```

Service Classes

This module contains the service classes, which implements the relational part using the attribute initialization. Create a package under **'src'** package named **'com.tutorialspoint.eclipselink.service'**. The DAO class named **OneToMany.java** is created under given package. The DAO class is shown as follows:

```
package com.tutorialspointeclipselink.service;

import java.util.List;
import java.util.ArrayList;

import javax.persistence.EntityManager;
import javax.persistence.EntityManagerFactory;
import javax.persistence.Persistence;

import com.tutorialspoint.eclipselink.entity.Department;
import com.tutorialspoint.eclipselink.entity.Employee;

public class OneToMany {
   public static void main(String[] args) {

   EntityManagerFactory emfactory = Persistence.createEntityManagerFactory(
"Eclipselink_JPA" );
   EntityManager entitymanager = emfactory.createEntityManager( );
   entitymanager.getTransaction( ).begin( );

   //Create Employee1 Entity
   Employee employee1 = new Employee();
   employee1.setEname("Satish");
   employee1.setSalary(45000.0);
   employee1.setDeg("Technical Writer");
```

```
   //Create Employee2 Entity
   Employee employee2 = new Employee();
   employee2.setEname("Krishna");
   employee2.setSalary(45000.0);
   employee2.setDeg("Technical Writer");

   //Create Employee3 Entity
   Employee employee3 = new Employee();
   employee3.setEname("Masthanvali");
   employee3.setSalary(50000.0);
   employee3.setDeg("Technical Writer");

   //Store Employee
   entitymanager.persist(employee1);
   entitymanager.persist(employee2);
   entitymanager.persist(employee3);

   //Create Employeelist
   List<Employee> emplist = new ArrayList();
   emplist.add(employee1);
   emplist.add(employee2);
   emplist.add(employee3);

   //Create Department Entity
   Department department = new Department();
   department.setName("Development");
   department.setEmployeelist(emplist);

   //Store Department
   entitymanager.persist(department);

   entitymanager.getTransaction().commit();
   entitymanager.close();
   emfactory.close();
   }
}
```

After compilation and execution of the above program you will get notifications in the console panel of Eclipse IDE. For output check MySQL workbench as follows. In this project three tables are created.

Pass the following query in MySQL interface and the result of **department_employee** table in a tabular format is shown as follows in the query:

```
Select * from department_Id;

Department_Id Employee_Eid
254           251
254           252
254           253
```

In the above table, deparment_id and employee_id fields are the foreign keys *referencefields* from department and employee tables.

Pass the following query in MySQL interface and the result of department table in a tabular format is shown as follows in the query:

```
Select * from department;

Id Name
254 Development
```

Pass the following query in MySQL interface and the result of employee table in a tabular format is shown as follows in the query:

```
Select * from employee;
```

```
Eid Deg                  Ename        Salary
251 Technical Writer Satish        45000
252 Technical Writer Krishna        45000
253 Technical Writer Masthanvali    50000
```

@OneToOne Relation

In One-To-One relationship, one item can belong to only one other item. It means each row of one entity is referred to one and only one row of another entity.

Let us consider the above example. **Employee** and **Department** in a reverse unidirectional manner, the relation is One-To-One relation. It means each employee belongs to only one department. Create a JPA project in eclipse IDE named **JPA_Eclipselink_OTO**. All the modules of this project are shown as follows:

Creating Entities

Follow the above given diagram for creating entities. Create a package named **'com.tutorialspoin.eclipselink.entity'** under **'src'** package. Create a class named **Department.java** under given package. The class Department entity is shown as follows:

```
package com.tutorialspoint.eclipselink.entity;

import javax.persistence.Entity;
import javax.persistence.GeneratedValue;
import javax.persistence.GenerationType;
import javax.persistence.Id;

@Entity
public class Department {

   @Id
   @GeneratedValue( strategy=GenerationType.AUTO )
   private int id;
   private String name;

   public int getId() {
      return id;
   }

   public void setId(int id) {
      this.id = id;
   }

   public String getName( ) {
      return name;
   }

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

Create the second entity in this relation -Employee entity class, named **Employee.java** under **'com.tutorialspoint.eclipselink.entity'** package. The Employee entity class is shown as follows:

```
package com.tutorialspoint.eclipselink.entity;

import javax.persistence.Entity;
import javax.persistence.GeneratedValue;
import javax.persistence.GenerationType;
import javax.persistence.Id;
import javax.persistence.OneToOne;

@Entity
public class Employee {
```

```
   @Id
   @GeneratedValue( strategy= GenerationType.AUTO )
   private int eid;
   private String ename;
   private double salary;
   private String deg;

   @OneToOne
   private Department department;

   public Employee(int eid, String ename, double salary, String deg) {
      super( );
      this.eid = eid;
      this.ename = ename;
      this.salary = salary;
      this.deg = deg;
   }

   public Employee( ) {
      super();
   }

   public int getEid( ) {
      return eid;
   }

   public void setEid(int eid) {
      this.eid = eid;
   }

   public String getEname( ) {
      return ename;
   }

   public void setEname(String ename) {
      this.ename = ename;
   }

   public double getSalary( ) {
      return salary;
   }

   public void setSalary(double salary) {
      this.salary = salary;
   }

   public String getDeg( ) {
      return deg;
   }

   public void setDeg(String deg) {
      this.deg = deg;
   }

   public Department getDepartment() {
      return department;
   }

   public void setDepartment(Department department) {
      this.department = department;
   }
}
```

Persistence.xml

Persistence.xml will be created by the eclipse IDE while creating a JPA Project. The configuration details are user specifications. The persistence.xml file is shown as follows:

```
<?xml version = "1.0" encoding = "UTF-8"?>
<persistence version = "2.0" xmlns = "http://java.sun.com/xml/ns/persistence"
   xmlns:xsi = "http://www.w3.org/2001/XMLSchema-instance"
   xsi:schemaLocation = "http://java.sun.com/xml/ns/persistence
   http://java.sun.com/xml/ns/persistence/persistence_2_0.xsd">

   <persistence-unit name = "Eclipselink_JPA" transaction-type = "RESOURCE_LOCAL">
      <class>com.tutorialspoint.eclipselink.entity.Employee</class>
      <class>com.tutorialspoint.eclipselink.entity.Department</class>

      <properties>
         <property name = "javax.persistence.jdbc.url" value =
"jdbc:mysql://localhost:3306/jpadb"/>
         <property name = "javax.persistence.jdbc.user" value = "root"/>
         <property name = "javax.persistence.jdbc.password" value = "root"/>
         <property name = "javax.persistence.jdbc.driver" value =
"com.mysql.jdbc.Driver"/>
         <property name = "eclipselink.logging.level" value = "FINE"/>
         <property name = "eclipselink.ddl-generation" value = "create-tables"/>
      </properties>

   </persistence-unit>
</persistence>
```

Service Classes

This module contains the service classes, which implements the relational part using the attribute initialization. Create a package under **'src'** package named **'com.tutorialspoint.eclipselink.service'**. The DAO class named **OneToOne.java** is created under the given package. The DAO class is shown as follows:

```
package com.tutorialspointeclipselink.service;

import javax.persistence.EntityManager;
import javax.persistence.EntityManagerFactory;
import javax.persistence.Persistence;

import com.tutorialspoint.eclipselink.entity.Department;
import com.tutorialspoint.eclipselink.entity.Employee;

public class OneToOne {
   public static void main(String[] args) {

   EntityManagerFactory emfactory = Persistence.createEntityManagerFactory(
"Eclipselink_JPA" );
   EntityManager entitymanager = emfactory.createEntityManager( );
   entitymanager.getTransaction( ).begin( );

   //Create Department Entity
   Department department = new Department();
   department.setName("Development");

   //Store Department
   entitymanager.persist(department);

   //Create Employee Entity
   Employee employee = new Employee();
   employee.setEname("Satish");
   employee.setSalary(45000.0);
   employee.setDeg("Technical Writer");
   employee.setDepartment(department);

   //Store Employee
   entitymanager.persist(employee);

   entitymanager.getTransaction().commit();
   entitymanager.close();
```

```
    emfactory.close();
    }
}
```

After compilation and execution of the above program you will get notifications in the console panel of Eclipse IDE. For output, check MySQL workbench as follows. In the above example two tables are created.

Pass the following query in MySQL interface and the result of **department** table in a tabular format is shown as follows in the query:

```
Select * from department

Id Name
301 Development
```

Pass the following query in MySQL interface and the result of **employee** table in a tabular format is shown as follows in the query:

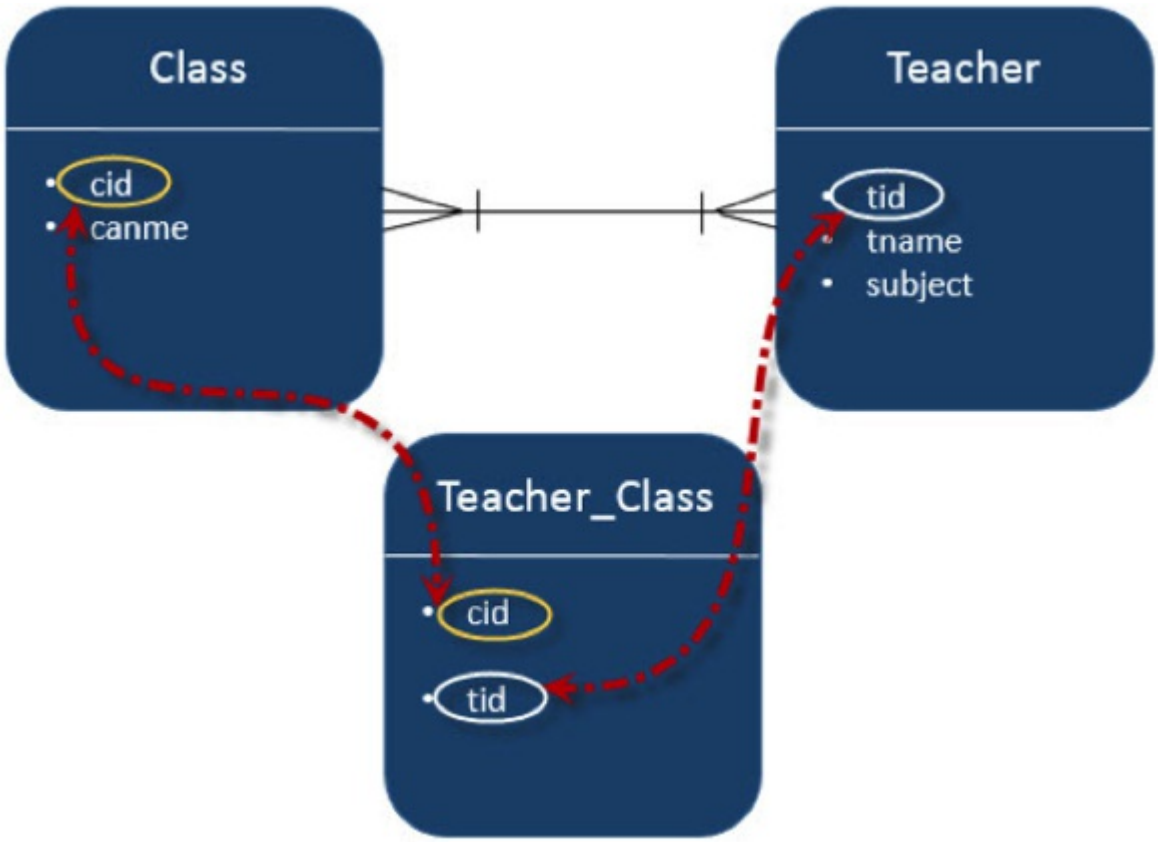
```
Select * from employee

Eid Deg                  Ename Salary Department_id
302 Technical Writer Satish 45000 301
```

@ManyToMany Relation

Many-To-Many relationship is where one or more rows from one entity are associated with more than one row in other entity.

Let us consider an example of relation between Class and Teacher entities. In bidirectional manner, both Class and Teacher have Many-To-One relation. That means each record of Class is referred by Teacher set *teacherids*, which should be primary keys in Teacher table and stored in Teacher_Class table and vice versa. Here, Teachers_Class table contains both foreign Key fields. Create a JPA project in eclipse IDE named **JPA_Eclipselink_MTM**. All the modules of this project are shown as follows:



Creating Entities

Follow the above given diagram for creating entities. Create a package named **'com.tutorialspoin.eclipselink.entity'** under **'src'** package. Create a class named **Clas.java** under given package. The class Department entity is shown as follows:

```
package com.tutorialspoint.eclipselink.entity;

import java.util.Set;

import javax.persistence.Entity;
import javax.persistence.GeneratedValue;
import javax.persistence.GenerationType;
import javax.persistence.Id;
import javax.persistence.ManyToMany;

@Entity
public class Clas {

   @Id
   @GeneratedValue( strategy = GenerationType.AUTO )

   private int cid;
   private String cname;

   @ManyToMany(targetEntity=Teacher.class)
   private Set teacherSet;

   public Clas(){
      super();
   }

   public Clas(int cid, String cname, Set teacherSet) {
      super();
      this.cid = cid;
      this.cname = cname;
      this.teacherSet = teacherSet;
   }

   public int getCid(){
      return cid;
   }

   public void setCid(int cid) {
      this.cid = cid;
   }

   public String getCname() {
      return cname;
   }

   public void setCname(String cname) {
      this.cname = cname;
   }

   public Set getTeacherSet() {
      return teacherSet;
   }

   public void setTeacherSet(Set teacherSet) {
      this.teacherSet = teacherSet;
   }
}
```

Create the second entity in this relation -Employee entity class, named **Teacher.java** under **'com.tutorialspoint.eclipselink.entity'** package. The Employee entity class is shown as follows:

```
package com.tutorialspoint.eclipselink.entity;

import java.util.Set;
```

```
import javax.persistence.Entity;
import javax.persistence.GeneratedValue;
import javax.persistence.GenerationType;
import javax.persistence.Id;
import javax.persistence.ManyToMany;

@Entity
public class Teacher {

   @Id
   @GeneratedValue( strategy = GenerationType.AUTO )
   private int tid;
   private String tname;
   private String subject;

   @ManyToMany(targetEntity = Clas.class)
   private Set clasSet;

   public Teacher(){
      super();
   }

   public Teacher(int tid, String tname, String subject, Set clasSet) {
      super();
      this.tid = tid;
      this.tname = tname;
      this.subject = subject;
      this.clasSet = clasSet;
   }

   public int getTid() {
      return tid;
   }

   public void setTid(int tid) {
      this.tid = tid;
   }

   public String getTname() {
      return tname;
   }

   public void setTname(String tname) {
      this.tname = tname;
   }

   public String getSubject() {
      return subject;
   }

   public void setSubject(String subject) {
      this.subject = subject;
   }

   public Set getClasSet() {
      return clasSet;
   }

   public void setClasSet(Set clasSet) {
      this.clasSet = clasSet;
   }
}
```

Persistence.xml

Persistence.xml will be created by the eclipse IDE while cresting a JPA Project. The configuration details are user specifications. The persistence.xml file is shown as follows:

```
<?xml version = "1.0" encoding = "UTF-8"?>
<persistence version = "2.0" xmlns = "http://java.sun.com/xml/ns/persistence"
   xmlns:xsi = "http://www.w3.org/2001/XMLSchema-instance"
   xsi:schemaLocation = "http://java.sun.com/xml/ns/persistence
   http://java.sun.com/xml/ns/persistence/persistence_2_0.xsd">

   <persistence-unit name = "Eclipselink_JPA" transaction-type = "RESOURCE_LOCAL">
      <class>com.tutorialspoint.eclipselink.entity.Employee</class>
      <class>com.tutorialspoint.eclipselink.entity.Department</class>

      <properties>
      <property name = "javax.persistence.jdbc.url" value =
"jdbc:mysql://localhost:3306/jpadb"/>
      <property name = "javax.persistence.jdbc.user" value = "root"/>
      <property name = "javax.persistence.jdbc.password" value = "root"/>
      <property name = "javax.persistence.jdbc.driver" value = "com.mysql.jdbc.Driver"/>
      <property name = "eclipselink.logging.level" value = "FINE"/>
      <property name = "eclipselink.ddl-generation" value = "create-tables"/>
      </properties>

   </persistence-unit>
</persistence>
```

Service Classes

This module contains the service classes, which implements the relational part using the attribute initialization. Create a package under **'src'** package named **'com.tutorialspoint.eclipselink.service'**. The DAO class named **ManyToMany.java** is created under given package. The DAO class is shown as follows:

```
package com.tutorialspoint.eclipselink.service;

import java.util.HashSet;
import java.util.Set;

import javax.persistence.EntityManager;
import javax.persistence.EntityManagerFactory;
import javax.persistence.Persistence;

import com.tutorialspoint.eclipselink.entity.Clas;
import com.tutorialspoint.eclipselink.entity.Teacher;

public class ManyToMany {
   public static void main(String[] args) {

   EntityManagerFactory emfactory = Persistence.createEntityManagerFactory(
"Eclipselink_JPA" );
   EntityManager entitymanager = emfactory.createEntityManager( );
   entitymanager.getTransaction( ).begin( );

   //Create Clas Entity
   Clas clas1 = new Clas(0, "1st", null);
   Clas clas2 = new Clas(0, "2nd", null);
   Clas clas3 = new Clas(0, "3rd", null);

   //Store Clas
   entitymanager.persist(clas1);
   entitymanager.persist(clas2);
   entitymanager.persist(clas3);

   //Create Clas Set1
   Set<Clas> classSet1 = new HashSet();
   classSet1.add(clas1);
   classSet1.add(clas2);
   classSet1.add(clas3);

   //Create Clas Set2
```

```
    Set<Clas> classSet2 = new HashSet();
    classSet2.add(clas3);
    classSet2.add(clas1);
    classSet2.add(clas2);

    //Create Clas Set3
    Set<Clas> classSet3 = new HashSet();
    classSet3.add(clas2);
    classSet3.add(clas3);
    classSet3.add(clas1);

    //Create Teacher Entity
    Teacher teacher1 = new Teacher(0, "Satish","Java",classSet1);
    Teacher teacher2 = new Teacher(0, "Krishna","Adv Java",classSet2);
    Teacher teacher3 = new Teacher(0, "Masthanvali","DB2",classSet3);

    //Store Teacher
    entitymanager.persist(teacher1);
    entitymanager.persist(teacher2);
    entitymanager.persist(teacher3);


    entitymanager.getTransaction( ).commit( );
    entitymanager.close( );
    emfactory.close( );
    }
}
```

After compilation and execution of the above program you will get notifications in the console panel of Eclipse IDE. For output, check MySQL workbench as follows. In this example project, three tables are created.

Pass the following query in MySQL interface and the result of **teacher_clas** table in a tabular format is shown as follows in the query.

```
Select * form teacher_clas;

Teacher _tid Classet_cid
354          351
355          351
356          351
354          352
355          352
356          352
354          353
355          353
356          353
```

In the above table teacher_tid is the foreign key from teacher table, and classet_cid is the foreign key from class table. Therefore different teachers are allotted to different class.

Pass the following query in MySQL interface and the result of teacher table in a tabular format is shown as follows in the query:

```
Select * from teacher;

Tid Subject     Tname
354 Java      Satish
355 Adv Java     Krishna
356 DB2          Masthanvali
```

Pass the following query in MySQL interface and the result of **clas** table in a tabular format is shown as follows in the query:

```
Select * from clas;

cid Cname
```

```
351 1st
352 2nd
353 3rd
```