Data Access Object Pattern

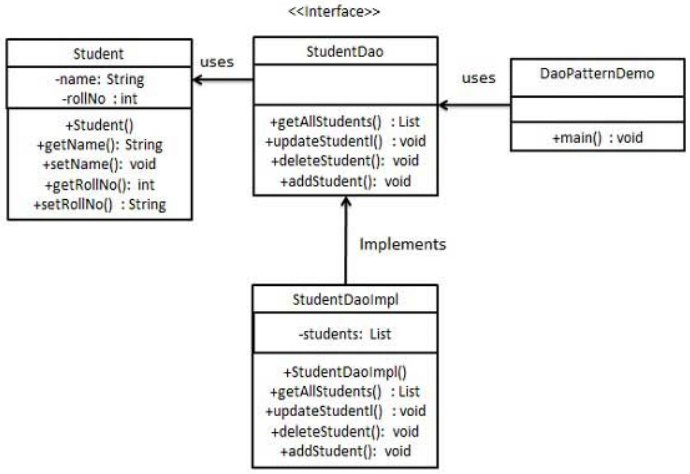
Previous Page Next Page

Data Access Object Pattern or DAO pattern is used to separate low level data accessing API or operations from high level business services. Following are the participants in Data Access Object Pattern.

- **Data Access Object Interface** - This interface defines the standard operations to be performed on a model object(s).
- **Data Access Object concrete class** - This class implements above interface. This class is responsible to get data from a data source which can be database / xml or any other storage mechanism.
- **Model Object or Value Object** - This object is simple POJO containing get/set methods to store data retrieved using DAO class.

Implementation

We are going to create a *Student* object acting as a Model or Value Object.*StudentDao* is Data Access Object Interface.*StudentDaoImpl* is concrete class implementing Data Access Object Interface. *DaoPatternDemo*, our demo class, will use *StudentDao* to demonstrate the use of Data Access Object pattern.



Step 1

Create Value Object.

Student.java

```
public class Student {
   private String name;
   private int rollNo;

   Student(String name, int rollNo){
      this.name = name;
      this.rollNo = rollNo;
   }

   public String getName() {
      return name;
   }

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

   public int getRollNo() {
      return rollNo;
   }

   public void setRollNo(int rollNo) {
```

Selected Reading


```
      this.rollNo = rollNo;
   }
}
```

Step 2

Create Data Access Object Interface.

StudentDao.java

```
import java.util.List;

public interface StudentDao {
   public List<Student> getAllStudents();
   public Student getStudent(int rollNo);
   public void updateStudent(Student student);
   public void deleteStudent(Student student);
}
```

Step 3

Create concrete class implementing above interface.

StudentDaoImpl.java

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

public class StudentDaoImpl implements StudentDao {

   //list is working as a database
   List<Student> students;

   public StudentDaoImpl(){
      students = new ArrayList<Student>();
      Student student1 = new Student("Robert",0);
      Student student2 = new Student("John",1);
      students.add(student1);
      students.add(student2);
   }
   @Override
   public void deleteStudent(Student student) {
      students.remove(student.getRollNo());
      System.out.println("Student: Roll No " + student.getRollNo() + ", deleted from databas
   }

   //retrive list of students from the database
   @Override
   public List<Student> getAllStudents() {
      return students;
   }

   @Override
   public Student getStudent(int rollNo) {
      return students.get(rollNo);
   }

   @Override
   public void updateStudent(Student student) {
      students.get(student.getRollNo()).setName(student.getName());
      System.out.println("Student: Roll No " + student.getRollNo() + ", updated in the datab
   }
}
```

Step 4

Use the *StudentDao* to demonstrate Data Access Object pattern usage.

DaoPatternDemo.java

```
public class DaoPatternDemo {
   public static void main(String[] args) {
      StudentDao studentDao = new StudentDaoImpl();

      //print all students
      for (Student student : studentDao.getAllStudents()) {
         System.out.println("Student: [RollNo : " + student.getRollNo() + ", Name : " + stud
      }
```

```
      //update student
      Student student =studentDao.getAllStudents().get(0);
      student.setName("Michael");
      studentDao.updateStudent(student);

      //get the student
      studentDao.getStudent(0);
      System.out.println("Student: [RollNo : " + student.getRollNo() + ", Name : " + student
   }
}
```

Step 5

Verify the output.

```
Student: [RollNo : 0, Name : Robert ]
Student: [RollNo : 1, Name : John ]
Student: Roll No 0, updated in the database
Student: [RollNo : 0, Name : Michael ]
```

Previous Page Print Page Next Page