

Pom.xml file:

```
<project xmlns="http://maven.apache.org/POM/4.0.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://maven.apache.org/POM/4.0.0
https://maven.apache.org/xsd/maven-4.0.0.xsd">

    <modelVersion>4.0.0</modelVersion>

    <groupId>LearnersAcademy</groupId>

    <artifactId>LearnersAcademy</artifactId>

    <version>0.0.1-SNAPSHOT</version>

    <packaging>war</packaging>

    <dependencies>

        <dependency>

            <groupId>javax.servlet</groupId>

            <artifactId>javax.servlet-api</artifactId>

            <version>4.0.1</version>

            <scope>provided</scope>

        </dependency>

        <dependency>

            <groupId>mysql</groupId>

            <artifactId>mysql-connector-java</artifactId>

            <version>8.0.33</version>

        </dependency>

        <dependency>

            <groupId>org.hibernate</groupId>

            <artifactId>hibernate-core</artifactId>

            <version>5.6.14.Final</version>

        </dependency>

        <dependency>

            <groupId>jstl</groupId>
```

```

        <artifactId>jstl</artifactId>
        <version>1.2</version>
    </dependency>
</dependencies>
<build>
    <plugins>
        <plugin>
            <artifactId>maven-compiler-plugin</artifactId>
            <version>3.8.1</version>
            <configuration>
                <source>1.8</source>
                <target>1.8</target>
            </configuration>
        </plugin>
        <plugin>
            <artifactId>maven-war-plugin</artifactId>
            <version>3.2.3</version>
        </plugin>
    </plugins>
</build>
</project>

```

1. Setting up HibernateUtil.java & hibernate.cfg.xml

- Create a package 'mypackage.util' in Java Resources.
- Create a java class HibernateUtil.java in mypackage.util.

HibernateUtil.java

```
package mypackage.util;
```

```
import org.hibernate.SessionFactory;
import org.hibernate.cfg.Configuration;
```

```

import mypackage.entities.Admin;
import mypackage.entities.Clazz;
import mypackage.entities.Student;
import mypackage.entities.Subject;
import mypackage.entities.Teacher;

public class HibernateUtil {

    static SessionFactory sessionFactory = null;

    public static SessionFactory buildSessionFactory() {

        if(sessionFactory != null) {
            return sessionFactory;
        }

        // STEP 1: Create Configuration Object
        Configuration cfg = new
Configuration().configure("hibernate.cfg.xml").addAnnotatedClass(Student.class)

.addAnnotatedClass(Subject.class).addAnnotatedClass(Clazz.class).addAnnotatedClass(
Teacher.class).addAnnotatedClass(Admin.class);

        sessionFactory = cfg.buildSessionFactory();
        return sessionFactory;
    }
}

```

Hibernate.cfg.xml

```

<?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>
        <property
name="hibernate.connection.driver_class">com.mysql.jdbc.Driver</property>
        <property
name="hibernate.connection.url">jdbc:mysql://localhost:3306/priya</property>

```

```

        <property name="hibernate.connection.username">root</property>
        <property
name="hibernate.connection.password">Priya@0456</property>

        <property name="hibernate.show_sql">true</property>
        <property name="hibernate.format_sql">true</property>

        <property name="hbm2ddl.auto">update</property>
    </session-factory>
</hibernate-configuration>

```

2. Creating Entity classes

- Create a package 'mypackage.entities' in Java Resources.
- Create java classes Admin.java, Clazz.java, Student.java, Subject.java, Teacher.java files in mypackage.entities.
- Define data models, add ORM annotations and map relationships.

Admin.java

```
package mypackage.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 javax.persistence.GenerationType;
import javax.persistence.Id;
import javax.persistence.OneToMany;
import javax.persistence.Table;
```

```
@Entity
@Table(name = "Admin")
public class Admin {
```

```
    @Id
    @GeneratedValue(strategy = GenerationType.IDENTITY)
    @Column(name = "admin_id")
    private int id;
```

```
    @Column(name = "admin_username")
```

```
private String username;
```

```
@Column(name = "admin_password")
```

```
private String password;
```

```
@OneToMany(mappedBy = "admin", fetch = FetchType.EAGER)
```

```
private Set<Subject> subjects = new HashSet<>();
```

```
@OneToMany(mappedBy = "admin", fetch = FetchType.EAGER)
```

```
private Set<Clazz> clazzes = new HashSet<>();
```

```
@OneToMany(mappedBy = "admin", fetch = FetchType.EAGER)
```

```
private Set<Teacher> teachers = new HashSet<>();
```

```
@OneToMany(mappedBy = "admin", fetch = FetchType.EAGER)
```

```
private Set<Student> students = new HashSet<>();
```

```
//Helper Methods
```

```
public void addSubject(Subject subject) {
```

```
    subjects.add(subject);
```

```
}
```

```
public void addClazz(Clazz clazz) {
```

```
    clazzes.add(clazz);
```

```
}
```

```
public void addTeacher(Teacher teacher) {
```

```
    teachers.add(teacher);
```

```
}
```

```
public void addStudent(Student student) {
```

```
    students.add(student);
```

```
}
```

```
//Getters and Setters
```

```
public int getId() {
```

```
    return id;
```

```
}
```

```
public void setId(int id) {
```

```
        this.id = id;
    }

    public String getUsername() {
        return username;
    }

    public void setUsername(String username) {
        this.username = username;
    }

    public String getPassword() {
        return password;
    }

    public void setPassword(String password) {
        this.password = password;
    }

    public Set<Subject> getSubjects() {
        return subjects;
    }

    public void setSubjects(Set<Subject> subjects) {
        this.subjects = subjects;
    }

    public Set<Clazz> getClazzes() {
        return clazzes;
    }

    public void setClazzes(Set<Clazz> clazzes) {
        this.clazzes = clazzes;
    }

    public Set<Teacher> getTeachers() {
        return teachers;
    }

    public void setTeachers(Set<Teacher> teachers) {
```

```

        this.teachers = teachers;
    }

    public Set<Student> getStudents() {
        return students;
    }

    public void setStudents(Set<Student> students) {
        this.students = students;
    }
}

```

Clazz.java

```

package mypackage.entities;

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

import javax.persistence.CascadeType;
import javax.persistence.Column;
import javax.persistence.Entity;
import javax.persistence.GeneratedValue;
import javax.persistence.GenerationType;
import javax.persistence.Id;
import javax.persistence.JoinColumn;
import javax.persistence.ManyToMany;
import javax.persistence.ManyToOne;
import javax.persistence.OneToMany;
import javax.persistence.Table;

@Entity
@Table(name = "Clazz")
public class Clazz {

    @Id
    @GeneratedValue(strategy = GenerationType.IDENTITY)
    @Column(name = "clazz_id")
    private int clazz_id;

    @Column(name = "clazz_name")

```

```

private String clazz_name;

@OneToMany(mappedBy = "clazz", cascade = CascadeType.ALL)
private Set<Subject> subjects = new HashSet<>();

@ManyToMany(mappedBy = "clazzes")
private Set<Teacher> teachers = new HashSet<>();

@ManyToOne(cascade = { CascadeType.PERSIST, CascadeType.MERGE })
@JoinColumn(name = "aid")
private Admin admin;

@OneToMany(mappedBy = "clazz", cascade = CascadeType.ALL)
private Set<Student> students = new HashSet<>();

// Helper Methods
public void addStudent(Student student) {
    this.students.add(student);
}

public void addSubject(Subject subject) {
    this.subjects.add(subject);
}

public void addTeacher(Teacher teacher) {
    this.teachers.add(teacher);
}

// Getters and Setters
public int getClazz_id() {
    return clazz_id;
}

public void setClazz_id(int clazz_id) {
    this.clazz_id = clazz_id;
}

public String getClazz_name() {
    return clazz_name;
}

```



```

public void setClazz_name(String clazz_name) {
    this.clazz_name = clazz_name;
}

public Set<Subject> getSubjects() {
    return subjects;
}

public void setSubjects(Set<Subject> subjects) {
    this.subjects = subjects;
}

public Set<Teacher> getTeachers() {
    return teachers;
}

public void setTeachers(Set<Teacher> teachers) {
    this.teachers = teachers;
}

public Admin getAdmin() {
    return admin;
}

public void setAdmin(Admin admin) {
    this.admin = admin;
}

public Set<Student> getStudents() {
    return students;
}

public void setStudents(Set<Student> students) {
    this.students = students;
}

}

```

Student.java

```

package mypackage.entities;

import javax.persistence.CascadeType;
import javax.persistence.Column;
import javax.persistence.Entity;
import javax.persistence.GeneratedValue;
import javax.persistence.GenerationType;
import javax.persistence.Id;
import javax.persistence.JoinColumn;
import javax.persistence.ManyToOne;
import javax.persistence.OneToOne;
import javax.persistence.Table;

@Entity
@Table(name = "Student")
public class Student {

    @Id
    @GeneratedValue(strategy = GenerationType.IDENTITY)
    @Column(name = "student_id")
    private int student_id;

    @Column(name = "student_name")
    private String student_name;

    @Column(name = "student_address")
    private String address;

    @OneToOne(cascade = CascadeType.ALL)
    @JoinColumn(name = "cid")
    private Clazz clazz;

    @ManyToOne(cascade = { CascadeType.PERSIST, CascadeType.MERGE })
    @JoinColumn(name = "aid")
    private Admin admin;

    // Helper Method
    public String getClazzName() {
        if (clazz != null) {
            return clazz.getClazz_name();
        }
    }
}

```

```
    }  
    return "";  
}  
  
// Getters and Setters  
public int getStudent_id() {  
    return student_id;  
}  
  
public void setStudent_id(int student_id) {  
    this.student_id = student_id;  
}  
  
public String getStudent_name() {  
    return student_name;  
}  
  
public void setStudent_name(String student_name) {  
    this.student_name = student_name;  
}  
  
public String getAddress() {  
    return address;  
}  
  
public void setAddress(String address) {  
    this.address = address;  
}  
  
publicClazz getClazz() {  
    return clazz;  
}  
  
public void setClazz(Clazz clazz) {  
    this.clazz = clazz;  
}  
  
public Admin getAdmin() {  
    return admin;  
}
```

```

        public void setAdmin(Admin admin) {
            this.admin = admin;
        }
    }
}

```

Subject.java

```

package mypackage.entities;

```

```

import javax.persistence.CascadeType;
import javax.persistence.Column;
import javax.persistence.Entity;
import javax.persistence.GeneratedValue;
import javax.persistence.GenerationType;
import javax.persistence.Id;
import javax.persistence.JoinColumn;
import javax.persistence.ManyToOne;
import javax.persistence.Table;

```

```

@Entity

```

```

@Table(name = "Subject")

```

```

public class Subject {

```

```

    @Id

```

```

    @GeneratedValue(strategy = GenerationType.IDENTITY)

```

```

    @Column(name = "subject_id")

```

```

    private int subject_id;

```

```

    @Column(name = "subject_name")

```

```

    private String subject_name;

```

```

    @Column(name = "subject_level")

```

```

    private String subject_level;

```

```

    @ManyToOne(cascade = { CascadeType.MERGE, CascadeType.PERSIST,
        CascadeType.REFRESH })

```

```

    @JoinColumn(name = "cid")

```

```

    private Clazz clazz;

```

```

    @ManyToOne(cascade = CascadeType.MERGE)

```

```

    @JoinColumn(name = "aid")

```

```
private Admin admin;

// Helper Method
public String getClazzName() {
    if (clazz != null) {
        return clazz.getClazz_name();
    }
    return "";
}

// Getters and Setters
public int getSubject_id() {
    return subject_id;
}

public void setSubject_id(int subject_id) {
    this.subject_id = subject_id;
}

public String getSubject_name() {
    return subject_name;
}

public void setSubject_name(String subject_name) {
    this.subject_name = subject_name;
}

public String getSubject_level() {
    return subject_level;
}

public void setSubject_level(String subject_level) {
    this.subject_level = subject_level;
}

public Clazz getClazz() {
    return clazz;
}

public void setClazz(Clazz clazz) {
```

```

        this.clazz = clazz;
    }

    public Admin getAdmin() {
        return admin;
    }

    public void setAdmin(Admin admin) {
        this.admin = admin;
    }
}

```

Teacher.java

```

package mypackage.entities;

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

import javax.persistence.CascadeType;
import javax.persistence.Column;
import javax.persistence.Entity;
import javax.persistence.GeneratedValue;
import javax.persistence.GenerationType;
import javax.persistence.Id;
import javax.persistence.JoinColumn;
import javax.persistence.JoinTable;
import javax.persistence.ManyToMany;
import javax.persistence.ManyToOne;
import javax.persistence.Table;

@Entity
@Table(name = "Teacher")
public class Teacher {

    @Id
    @GeneratedValue(strategy = GenerationType.IDENTITY)
    @Column(name = "teacher_id")
    private int teacher_id;

    @Column(name = "teacher_name")

```

```

private String teacher_name;

@Column(name = "teacher_qual")
private String teacher_qual;

@ManyToMany(cascade = { CascadeType.PERSIST, CascadeType.MERGE })
@JoinTable(
    name = "teacher_class",
    joinColumns = { @JoinColumn(name = "teacher_id") },
    inverseJoinColumns = { @JoinColumn(name = "class_id") }
)
private Set<Clazz> clazzes = new HashSet<>();

@ManyToOne(cascade = { CascadeType.PERSIST, CascadeType.MERGE })
@JoinColumn(name = "aid", referencedColumnName = "admin_id")
private Admin admin;

// Helper Method
public void addClass(Clazz clazz) {
    clazzes.add(clazz);
}

// Getters and Setters
public int getTeacher_id() {
    return teacher_id;
}

public void setTeacher_id(int teacher_id) {
    this.teacher_id = teacher_id;
}

public String getTeacher_name() {
    return teacher_name;
}

public void setTeacher_name(String teacher_name) {
    this.teacher_name = teacher_name;
}

public String getTeacher_qual() {

```

```

        return teacher_qual;
    }

    public void setTeacher_qual(String teacher_qual) {
        this.teacher_qual = teacher_qual;
    }

    public String getClazzes() {
        StringBuffer sb = new StringBuffer();
        if(clazzes != null && clazzes.size()>0)
        {
            for(Class c : clazzes)
            {
                sb.append(c.getClass_name() + ",");
            }
        }
        return sb.toString();
    }

    public void setClazzes(Set<Clazz> clazzes) {
        this.clazzes = clazzes;
    }

    public Admin getAdmin() {
        return admin;
    }

    public void setAdmin(Admin admin) {
        this.admin = admin;
    }
}

```

3. Creating DAO interfaces

- Create a package 'mypackage.dao' in Java Resources.
- Create interfaces AdminDao.java, ClazzDao.java, StudentDao.java, SubjectDao.java, TeacherDao.java.
- Define CRUD operations required for each entity.

AdminDao.java

```
package mypackage.dao;
```



```
import mypackage.entities.Admin;

public interface AdminDao {

    void insert(Admin admin);
    Admin getAdmin(String username, String password);
}
```

ClazzDao.java

```
package mypackage.dao;

import java.util.List;

import mypackage.entities.Clazz;

public interface ClazzDao {

    void add(Clazz clazz) throws Exception;
    void delete(int id) throws Exception;
    Clazz getClazzById(int cid);
    List<Clazz> getAll();
    Clazz getByName(String className);
}
```

StudentDao.java

```
package mypackage.dao;

import java.util.List;

import mypackage.entities.Clazz;
import mypackage.entities.Student;

public interface StudentDao {

    void add(Student student) throws Exception;
    void delete(int sid) throws Exception;
    List<Student> getAll();
    List<Student> getByClass(Clazz clazz);
}
```

SubjectDao .java

```
package mypackage.dao;
```

```

import java.util.List;

import mypackage.entities.Clazz;
import mypackage.entities.Subject;

public interface SubjectDao {

    void add(Subject subject) throws Exception;
    void delete(int sid) throws Exception;
    void update(Subject subject) throws Exception;
    List<Subject> getAll();
    Subject getSubjectById(int subjectId);
    List<Subject> getByClass(Clazz clazz);
}

```

TeacherDao.java

```

package mypackage.dao;

import java.util.List;

import mypackage.entities.Teacher;

public interface TeacherDao {

    void add(Teacher teacher) throws Exception;
    void delete(int tid) throws Exception;
    List<Teacher> getAll();
}

```

4. Creating DAOImpl classes

- Create a package 'mypackage.daoimpl' in Java Resources.
- Create java classes AdminDaoImpl.java, ClazzDaoImpl.java, StudentDaoImpl.java, SubjectDaoImpl.java and TeacherDaoImpl.java.
- Provide concrete implementations for the CRUD operations and other data access methods defined in the DAO interface.

AdminDaoImpl.java

```

package mypackage.daoimpl;

import org.hibernate.Query;
import org.hibernate.Session;
import org.hibernate.SessionFactory;
import org.hibernate.Transaction;

```

```
import mypackage.dao.AdminDao;
import mypackage.entities.Admin;
import mypackage.util.HibernateUtil;
```

```
public class AdminDaoImpl implements AdminDao {
```

```
    @Override
```

```
    public void insert(Admin admin) {
```

```
        SessionFactory sessionFactory = HibernateUtil.buildSessionFactory();
```

```
        Session session = sessionFactory.openSession();
```

```
        Transaction tx = null;
```

```
        try {
```

```
            tx = session.beginTransaction();
```

```
            session.save(admin);
```

```
            tx.commit();
```

```
        } catch (Exception e) {
```

```
            e.printStackTrace();
```

```
        } finally {
```

```
            session.close();
```

```
        }
```

```
    }
```

```
    @Override
```

```
    public Admin getAdmin(String username, String password) {
```

```
        SessionFactory sessionFactory = null;
```

```
        Session session = null;
```

```
        Query<Admin> query = null;
```

```
        Admin admin = null;
```

```
        try {
```

```
            sessionFactory = HibernateUtil.buildSessionFactory();
```

```
            session = sessionFactory.openSession();
```

```
            query = session.createQuery("select a from
```

```
mypackage.entities.Admin a where a.username = ?1 and a.password = ?2");
```

```
            query.setParameter(1, username); // Set the value for the first
```

```
ordinal parameter
```

```
            query.setParameter(2, password);
```

```
            admin = query.uniqueResult();
```

```

        } catch (Exception e) {
            e.printStackTrace();
        }
        finally {
            session.close();
        }
        return admin;
    }
}

```

ClazzDaoImpl.java

```

package mypackage.daoimpl;

import java.util.List;

import org.hibernate.Query;
import org.hibernate.Session;
import org.hibernate.SessionFactory;
import org.hibernate.Transaction;

import mypackage.dao.ClazzDao;
import mypackage.entities.Clazz;
import mypackage.util.HibernateUtil;

public class ClazzDaoImpl implements ClazzDao {

    @Override
    public void add(Clazz clazz) throws Exception {

        SessionFactory sessionFactory = HibernateUtil.buildSessionFactory();
        Session session = sessionFactory.openSession();
        Transaction tx = null;
        try {
            tx = session.beginTransaction();
            session.save(clazz);
            tx.commit();
        } catch (Exception e) {
            if (tx != null) {
                tx.rollback();
            }
        }
    }
}

```

```

        throw new Exception("Failed to add teacher.", e);
    } finally {
        session.close();
    }
}

```

```

@Override
public void delete(int id) throws Exception {

    SessionFactory sessionFactory = HibernateUtil.buildSessionFactory();
    Session session = sessionFactory.openSession();
    Transaction tx = null;
    try {
        tx = session.beginTransaction();
       Clazz clazz = session.get(Clazz.class, id);
        session.delete(clazz);
        tx.commit();
    } catch (Exception e) {
        if (tx != null) {
            tx.rollback();
        }
    }
    throw new Exception("Failed to delete teacher.", e);
    } finally {
        session.close();
    }
}

```

```

@Override
public List<Clazz> getAll() {

    SessionFactory sessionFactory = HibernateUtil.buildSessionFactory();
    Session session = sessionFactory.openSession();
    Query<Clazz> query = session.createQuery("select c from
mypackage.entities.Clazz c");
    return query.list();
}

```

```

@Override
public Clazz getClazzById(int cid) {

```

```

        SessionFactory sessionFactory = HibernateUtil.buildSessionFactory();
        Session session = sessionFactory.openSession();
        Query<Clazz> query = session.createQuery("select c from
mypackage.entities.Clazz c where c.clazz_id = ?1");
        query.setParameter(1, cid);
        Clazz result = (Clazz) query.uniqueResult();
        session.close();
        return result;
    }

```

```

    @Override
    public Clazz getByName(String className) {

        SessionFactory sessionFactory = HibernateUtil.buildSessionFactory();
        Session session = sessionFactory.openSession();
        Query<Clazz> query = session.createQuery("SELECT c FROM Clazz c WHERE
c.className = :className");
        query.setParameter("className", className);
        Clazz result = query.uniqueResult();
        session.close();
        return result;
    }
}

```

StudentDaoImpl.java

```

package mypackage.daoimpl;

import java.util.List;

import org.hibernate.Query;
import org.hibernate.Session;
import org.hibernate.SessionFactory;
import org.hibernate.Transaction;

import mypackage.dao.StudentDao;
import mypackage.entities.Clazz;
import mypackage.entities.Student;
import mypackage.util.HibernateUtil;

public class StudentDaoImpl implements StudentDao {

```

```

@Override
public void add(Student student) throws Exception {

    SessionFactory sessionFactory = HibernateUtil.buildSessionFactory();
    Session session = sessionFactory.openSession();
    Transaction tx = null;
    try {
        tx = session.beginTransaction();
        session.save(student);
        tx.commit();
    } catch (Exception e) {
        if (tx != null) {
            tx.rollback();
        }
    }
    throw new Exception("Failed to add teacher.", e);
    } finally {
        session.close();
    }
}

```

```

@Override
public void delete(int sid) throws Exception {

    SessionFactory sessionFactory = HibernateUtil.buildSessionFactory();
    Session session = sessionFactory.openSession();
    Transaction tx = null;
    try {
        tx = session.beginTransaction();
        Student student = session.get(Student.class, sid);
        session.delete(student);
        tx.commit();
    } catch (Exception e) {
        if (tx != null) {
            tx.rollback();
        }
    }
    throw new Exception("Failed to delete teacher.", e);
    } finally {
        session.close();
    }
}

```

```

@Override
public List<Student> getAll() {

    SessionFactory sessionFactory = HibernateUtil.buildSessionFactory();
    Session session = sessionFactory.openSession();
    Query<Student> query = session.createQuery("select s from
mypackage.entities.Student s");
    return query.list();
}

```

```

@Override
public List<Student> getByClass(Class clazz) {

    SessionFactory sessionFactory = HibernateUtil.buildSessionFactory();
    Session session = sessionFactory.openSession();
    Query<Student> query = session.createQuery("SELECT s FROM Student s
WHERE s.clazz = :clazz");
    query.setParameter("clazz", clazz);
    List<Student> students = query.list();
    session.close();
    return students;
}
}

```

SubjectDaoImpl.java

```

package mypackage.daoimpl;

import java.util.List;

import org.hibernate.Query;
import org.hibernate.Session;
import org.hibernate.SessionFactory;
import org.hibernate.Transaction;

import mypackage.dao.SubjectDao;
import mypackage.entities.Clazz;
import mypackage.entities.Subject;
import mypackage.util.HibernateUtil;

public class SubjectDaoImpl implements SubjectDao {

```



```

@Override
public void add(Subject subject) throws Exception {

    SessionFactory sessionFactory = HibernateUtil.buildSessionFactory();
    Session session = sessionFactory.openSession();
    Transaction tx = null;
    try {
        tx = session.beginTransaction();
        session.save(subject);
        tx.commit();
    } catch (Exception e) {
        if (tx != null) {
            tx.rollback();
        }
        throw new Exception("Failed to add subject.", e);
    } finally {
        session.close();
    }
}

```

```

@Override
public void delete(int sid) throws Exception {

    SessionFactory sessionFactory = HibernateUtil.buildSessionFactory();
    Session session = sessionFactory.openSession();
    Transaction tx = null;
    try {
        tx = session.beginTransaction();
        Subject subject = session.get(Subject.class, sid);
        session.delete(subject);
        tx.commit();
    } catch (Exception e) {
        if (tx != null) {
            tx.rollback();
        }
        throw new Exception("Failed to delete subject.", e);
    } finally {
        session.close();
    }
}

```

```
}
```

```
@Override
```

```
public void update(Subject subject) throws Exception {
```

```
    SessionFactory sessionFactory = HibernateUtil.buildSessionFactory();
```

```
    Session session = sessionFactory.openSession();
```

```
    Transaction tx = null;
```

```
    try {
```

```
        tx = session.beginTransaction();
```

```
        Subject sub = session.get(Subject.class, subject.getSubject_id());
```

```
        session.update(sub);
```

```
        tx.commit();
```

```
    } catch (Exception e) {
```

```
        if (tx != null) {
```

```
            tx.rollback();
```

```
    }
```

```
    throw new Exception("Failed to update subject.", e);
```

```
    } finally {
```

```
        session.close();
```

```
}
```

```
}
```

```
@Override
```

```
public List<Subject> getAll() {
```

```
    SessionFactory sessionFactory = HibernateUtil.buildSessionFactory();
```

```
    Session session = sessionFactory.openSession();
```

```
    Query<Subject> query = session.createQuery("select s from  
mypackage.entities.Subject s");
```

```
    return query.list();
```

```
}
```

```
@Override
```

```
public Subject getSubjectById(int subjectId) {
```

```
    SessionFactory sessionFactory = HibernateUtil.buildSessionFactory();
```

```
    Session session = sessionFactory.openSession();
```

```
    Query<Subject> query = session.createQuery("select s from  
mypackage.entities.Subject s where s.subject_id = ?1");
```

```

        query.setParameter(1, subjectId);
        Subject result = (Subject) query.uniqueResult();
        session.close();
        return result;
    }

    @Override
    public List<Subject> getByClass(Class clazz) {

        SessionFactory sessionFactory = HibernateUtil.buildSessionFactory();
        Session session = sessionFactory.openSession();
        Query<Subject> query = session.createQuery("SELECT s FROM Subject s
WHERE s.clazz = :clazz");
        query.setParameter("clazz", clazz);
        List<Subject> subjects = query.list();
        session.close();
        return subjects;
    }
}

```

TeacherDaoImpl.java

```

package mypackage.daoimpl;

import java.util.List;

import org.hibernate.Query;
import org.hibernate.Session;
import org.hibernate.SessionFactory;
import org.hibernate.Transaction;

import mypackage.dao.TeacherDao;
import mypackage.entities.Teacher;
import mypackage.util.HibernateUtil;

public class TeacherDaoImpl implements TeacherDao{

    @Override
    public void add(Teacher teacher) throws Exception {

        SessionFactory sessionFactory = HibernateUtil.buildSessionFactory();
        Session session = sessionFactory.openSession();
    }
}

```

```

        Transaction tx = null;
        try {
            tx = session.beginTransaction();
            session.save(teacher);
            tx.commit();
        } catch (Exception e) {
            if (tx != null) {
                tx.rollback();
            }
        }
        throw new Exception("Failed to add teacher.", e);
    } finally {
        session.close();
    }
}

}

```

```

@Override
public void delete(int tid) throws Exception {

    SessionFactory sessionFactory = HibernateUtil.buildSessionFactory();
    Session session = sessionFactory.openSession();
    Transaction tx = null;
    try {
        tx = session.beginTransaction();
        Teacher teacher = session.get(Teacher.class, tid);
        session.delete(teacher);
        tx.commit();
    } catch (Exception e) {
        if (tx != null) {
            tx.rollback();
        }
    }
    throw new Exception("Failed to delete teacher.", e);
} finally {
    session.close();
}

}

```

```

@Override
public List<Teacher> getAll() {

```

```

SessionFactory sessionFactory = HibernateUtil.buildSessionFactory();
Session session = sessionFactory.openSession();
Query<Teacher> query = session.createQuery("select t from
mypackage.entities.Teacher t");
return query.list();
}
}

```

5. Creating .jsp files

- Create .jsp files in webapp folder in src.
- Create index.jsp file which serves as the entry point of the application and other .jsp files for creating views in the web application.
- Create .css files or embed the CSS styles in .jsp file itself.

index.jsp

```

<% @ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"% >
<!DOCTYPE html>
<html>
<head>
<style>
.welcome {
    text-align: center;
    padding-bottom: 20px;
}
fieldset {
    text-align: center;
    border: 2px #01257D solid;
}
legend {
    text-align: center;
    color: #01257D;
    font-size: 20px;
    font-weight: 700;
}
.option {
    font-size: 12px;
    padding-top: 8px;
}
</style>

```

```

<meta charset="UTF-8">
<title>Login Page</title>
</head>
<body>

    <% @ include file="header.jsp"%>

    <div class="welcome">
        <h1>Learner's Academy</h1>
    </div>
    <form action="logincontroller" method="post" style = "width: 400px; margin:
0px auto;">
        <fieldset>
            <legend>Admin Login</legend><br>
            Username : <input type="text" id="username" name="username"
required><br><br>
            Password : <input type="password" id="password"
name="password" required><br><br>
            <input type="submit" value="Submit">

            <div class="option">
                Not a registered user?<a href="register.jsp">Click here</a>
            </div>
        </fieldset>
    </form>

</body>
</html>

```

about.jsp

```

<% @ page language="java" contentType="text/html; charset=UTF-8"
pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
<head>
    <style>
        h1 {
            color: #01257D;

```

```
        text-align: center;
    }

.details-container {
    width: 600px;
    color: #01257D;
    text-align: justify;
    padding-left: 618px;
}

.details {
    width: 300px;
    word-wrap: break-word;
    text-align: center;
}
</style>
<meta charset="UTF-8">
<title>About Developer</title>
</head>
<body>
    <% @ include file="header.jsp"%>

    <h1> About Developer </h1>

    <div class="details-container">
        <div class="details">
            <p>
                Name : Tejeswi Devi Priya<br><br>
                Email ID : priyapillarisetty19@gmail.com
            </p>
            <p>
                Thank you for exploring the Learner's Academy Backend Admin Portal.
            </p>
            <p>
                Should you have any queries or feedback regarding the portal, please feel free
                to reach out to me at the provided email address.
            </p>
        </div>
    </div>
</body>
```

</html>

addclazz.jsp

```
<% @ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"% >
<!DOCTYPE html>
<html>
<head>
<style>
form {
    padding-top: 50px;
}

fieldset {
    text-align: center;
    border: 2px #01257D solid;
    overflow: auto;
}

legend {
    text-align: center;
    color: #01257D;
    font-size: 20px;
    font-weight: 700;
}

label {
    display: inline-block;
    width: 80px;
    text-align: right;
    font-weight: 600;
    color: #01257D;
    margin-right: 5px;
}

input[type="text"] {
    width: 167px;
}
</style>
<meta charset="UTF-8">
<title>Add Clazz</title>
```



```

</head>
<body>
    <% @ include file="header.jsp"%>

    <form action="clazzcontroller" method="post" style="width: 400px; margin: 0px
auto;">
        <fieldset>
            <legend>Add Clazz form</legend><br>
            <label>Name : </label><input type="text" name="clazzname"
required><br><br>

            <input type="submit" value="Submit">
        </fieldset>
    </form>
</body>
</html>

```

addstudent.jsp

```

<% @ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
<% @ page import="java.util.List"%>
<% @ page import="mypackage.entities.Clazz"%>
<% @ page import="mypackage.dao.ClazzDao"%>
<% @ page import="mypackage.daoimpl.ClazzDaoImpl"%>
<head>
<style>
form {
    padding-top: 50px;
}

fieldset {
    text-align: center;
    border: 2px #01257D solid;
    overflow: auto;
}

legend {
    text-align: center;

```

```

        color: #01257D;
        font-size: 20px;
        font-weight: 700;
    }

    label {
        display: inline-block;
        width: 120px;
        text-align: right;
        font-weight: 600;
        color: #01257D;
        margin-right: 5px;
    }
    input[type="text"], select {
        width: 167px;
    }
    select option[disabled] {
        text-align: center;
        padding: 0;
    }
}
</style>
<meta charset="UTF-8">
<title>Add Student</title>
</head>
<body>
    <% @ include file="header.jsp"%>

    <%
       ClazzDao clazzDao = new ClazzDaoImpl();
        List<Clazz> clazzes = clazzDao.getAll();
        request.setAttribute("clazzes", clazzes);
    %>
    <form action="studentcontroller" method="post" style="width: 400px; margin:
0px auto;">
        <fieldset>
            <legend>Add Student form</legend><br>
            <label>Name : </label><input type="text" name="studentname"
required><br><br>
            <label>Address : </label><input type="text"
name="studentaddress" required>

```

```

        <p>
        <label> Assign Class : </label> <select name="clazzname"
id="clazzname" required>
            <option disabled selected value>-- select class --</option>
            <% for (Clazz clazz : clazzes) { %>
            <option value="<%= clazz.getClazz_id() %>"><%=
clazz.getClazz_name() %></option>
            <% } %>
        </select>
    </p>
    <input type="submit" value="Submit">
</fieldset>
</form>
</body>
</html>

```

[addsubject.jsp](#)

```

<% @page import="mypackage.serviceimpl.ClazzServiceImpl"%>
<% @ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
<% @ page import="java.util.List"%>
<% @ page import="mypackage.entities.Clazz"%>
<% @ page import="mypackage.dao.ClazzDao"%>
<% @ page import="mypackage.daoimpl.ClazzDaoImpl"%>
<head>
<style>
form {
    padding-top: 50px;
}

fieldset {
    text-align: center;
    border: 2px #01257D solid;
    overflow: auto;
}

legend {
    text-align: center;

```

```

        color: #01257D;
        font-size: 20px;
        font-weight: 700;
    }

    label {
        display: inline-block;
        width: 120px;
        text-align: right;
        font-weight: 600;
        color: #01257D;
        margin-right: 5px;
    }

    input[type="text"], select {
        width: 167px;
    }
    select option[disabled] {
        text-align: center;
        padding: 0;
    }
}
</style>
<meta charset="UTF-8">
<title>Add Subject</title>
</head>
<body>
    <% @ include file="header.jsp"%>

    <%
       ClazzDao clazzDao = new ClazzDaoImpl();
        List<Clazz> clazzes = clazzDao.getAll();
        request.setAttribute("clazzes", clazzes);
    %>
    <form action="subjectcontroller" method="post"
        style="width: 400px; margin: 0px auto;">
        <fieldset>
            <legend>Add Subject form</legend>
            <br> <label>Name: </label><input type="text"
name="subjectname"
                required>

```

```

        <p>
            <label>Level: </label> <select name="subjectlevel"
id="subjectlevel"
                required>
                    <option disabled selected value>-- select level --
</option>
                    <option value="Level I">Level I</option>
                    <option value="Level II">Level II</option>
                </select>
        </p>
        <p>
            <label> Assign Class : </label> <select name="clazzname"
id="clazzname"
                required>
                    <option disabled selected value>-- select class --</option>
                    <% for (Clazz clazz : clazzes) { %>
                        <option value="<%= clazz.getClazz_id() %>"><%=
clazz.getClazz_name() %></option>
                        <% } %>
                    </select>
        </p>

        <input type="submit" value="Submit">
    </fieldset>
</form>
</body>
</html>

```

addteacher.jsp

```

<% @ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
<% @ page import="java.util.List"%>
<% @ page import="mypackage.entities.Clazz" %>
<% @ page import="mypackage.dao.ClazzDao" %>
<% @ page import="mypackage.daoimpl.ClazzDaoImpl" %>
<head>
<style>
form {

```

```

        padding-top: 50px;
    }

    fieldset {
        text-align: center;
        border: 2px #01257D solid;
        overflow: auto;
    }

    legend {
        text-align: center;
        color: #01257D;
        font-size: 20px;
        font-weight: 700;
    }

    label {
        display: inline-block;
        width: 120px;
        text-align: right;
        font-weight: 600;
        color: #01257D;
        margin-right: 5px;
    }
    input[type="text"], select {
        width: 167px;
    }
    select option[disabled] {
        text-align: center;
        padding: 0;
    }
</style>
<meta charset="UTF-8">
<title>Add Teacher</title>
</head>
<body>
    <% @ include file="header.jsp"%>

    <%
       ClazzDao clazzDao = new ClazzDaoImpl();

```

```

        List<Clazz> clazzes = clazzDao.getAll();
        request.setAttribute("clazzes", clazzes);
    %>
    <form action="teachercontroller" method="post" style="width: 400px; margin:
0px auto;">
        <fieldset>
            <legend>Add Teacher form</legend><br>
            <label>Name : </label><input type="text" name="teachername"
required>

            <p>
                <label>Qualification : </label> <select
name="qualification" id="qualification" required>
                    <option disabled selected value>-- select
qualification --</option>
                    <option value="BTech">BTech</option>
                    <option value="MTech">MTech</option>
                </select>
            </p>
            <p>
                <label> Assign Class : </label> <select name="clazzname"
id="clazzname" required>
                    <option disabled selected value>-- select class --</option>
                    <% for (Clazz clazz : clazzes) { %>
                        <option value="<%= clazz.getClazz_id() %>"><%=
clazz.getClazz_name() %></option>
                    <% } %>
                </select>
            </p>

            <input type="submit" value="Submit">
        </fieldset>
    </form>
</body>
</html>

```

clazzlist.jsp

```

<% @ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>

```

```
<% @ page import="java.util.List" %>
<% @ page import="mypackage.entities.Clazz" %>
<% @ page import="mypackage.dao.ClazzDao" %>
<% @ page import="mypackage.daoimpl.ClazzDaoImpl" %>
<head>
<style>
    table {
        border-collapse: collapse;
        width: 50%;
        margin: auto;
    }
    th, td {
        border: 2px #01257D solid;
        text-align: center;
    }
    th {
        color: #333;
        font-weight: bold;
    }
    .head1 {
        color: #01257D;
        padding-top: 10px;
        padding-bottom: 10px;
        text-align: center;
    }
</style>

<meta charset="UTF-8">
<title>Class List</title>
</head>
<body>
    <% @ include file="header.jsp"%>
    <%
        ClazzDao clazzDao = new ClazzDaoImpl();
        List<Clazz> clazzes = clazzDao.getAll();
        request.setAttribute("clazzes", clazzes);
    %>
    <div class="head1">
        <h1> Class List </h1>
    </div>
```



```

        <table>
            <tr>
                <th> Class ID </th>
                <th> Class Name </th>
                <th> Actions </th>
            </tr>
            <% int sequence = 1; %>
            <%
                for(Clazz clazz : clazzes) {
            %>
                <tr>
                    <td><%= sequence %></td>
                    <td><%= clazz.getClazz_name() %></td>
                    <td>
                        <form action="clazzlist.jsp" method="POST">
                            <input type="hidden" name="cid"
value="<%= clazz.getClazz_id() %>">
                            <button type="submit" name="action"
value="delete">Delete</button>
                        </form>
                    </td>
                </tr>
                <% sequence++; %>
            <%
                }
            %>
            <tr>
                <td colspan="4">
                    <form action="addclazz.jsp" method="GET">
                        <button type="submit"> Add Class
</button>
                    </form>
                </td>
            </tr>
        </table>
        <%
            String action = request.getParameter("action");
            if (action != null && action.equals("delete")) {
                int cid = Integer.parseInt(request.getParameter("cid"));
                clazzDao.delete(cid);

```

```

        response.sendRedirect("clazzlist.jsp");
    }
    %>
</body>
</html>

```

header.jsp

```

<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8" />
<meta http-equiv="X-UA-Compatible" content="IE=edge" />
<meta name="viewport" content="width=device-width, initial-scale=1.0" />
<style>
@import
    url("https://fonts.googleapis.com/css2?family=Open+Sans&display=swap");

body {
    font-family: "Open Sans", sans-serif;
    margin: 0;
    background: url(https://images.unsplash.com/photo-1464618663641-
bbdd760ae84a?ixlib=rb-
4.0.3&ixid=M3wxMjA3fDB8MHxwaG90by1wYWdlfHx8fGVufDB8fHx8fA%3D%3D
&auto=format&fit=crop&w=1170&q=80);
    background-repeat: no-repeat;
    background-size: cover;
}
a {
    text-decoration: none;
    color: #00FFFF;
    padding-left: 15px;
}
a:hover {
    color: #fff;
}
.header {
    border-bottom: 1px solid #ccc;
    display: flex;
    background: #01257D;
    justify-content: space-between;

```

```

}
.site-name h1 {
    font-size: 28px;
    margin: 10px 10px 0px 10px;
    display: inline-block;
}
.nav-options ul, .nav-options li {
    margin: 0;
    padding-right: 20px;
}
.nav-options li {
    display: inline-block;
    margin: 23px 15px 16px 16px;
}
</style>
<title>Header</title>
</head>
<body>
    <header class="header">
        <div class="site-name">
            <h1>
                <a href="home.jsp">Learner's Academy</a>
            </h1>
        </div>
        <nav class="nav-options">
            <ul class="nav">
                <li><a href="home.jsp">Home</a></li>
                <li><a href="about.jsp">About</a></li>
                <li><a href="logout.jsp">Logout</a></li>
            </ul>
        </nav>
    </header>
</body>
</html>

```

home.jsp

```

<% @ page language="java" contentType="text/html; charset=UTF-8"
pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>

```

```

<head>
<link rel="stylesheet" href="home-styles.css">
<meta charset="UTF-8">
<title>Home Page</title>
</head>
<body>
    <% @ include file="header.jsp"%>

    <div class="heading">
        <h2>Welcome to Learner's Academy</h2>
    </div>
    <div class="tiles">
        <div class="column-3 option-1">
            <h2 class="option-text"><a
href="subjectslist.jsp">Subjects<br>List</a></h2>
        </div>
        <div class="column-3 option-2">
            <h2 class="option-text"><a
href="teacherslist.jsp">Teachers<br>List</a></h2>
        </div>
        <div class="column-3 option-3">
            <h2 class="option-text"><a
href="clazzlist.jsp">Classes<br>List</a></h2>
        </div>
        <div class="column-3 option-4">
            <h2 class="option-text"><a
href="studentslist.jsp">Students<br>List</a></h2>
        </div>
        <div class="column-3 option-5">
            <h2 class="option-text">Learner's Academy</h2>
        </div>
        <div class="column-3 option-6">
            <h2 class="option-text"><a href="viewclassreport.jsp">View
Class<br>Report</a></h2>
        </div>
    </div>
</body>
</html>

```

[invalidcred.jsp](#)

```

<% @ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
<head>
<style>
h2 {
    padding-left: 10px;
    padding-top: 20px;
    text-align: center;
}
</style>
<meta charset="UTF-8">
<title>Invalid Credentials</title>
</head>
<body>

    <% @ include file="header.jsp"%>

    <h2>You have entered invalid credentials! <br><br>
    <a href="index.jsp">Click here</a> to try again.</h2>
</body>
</html>

```

logout.jsp

```

<% @ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
<% @ page import="javax.servlet.http.HttpSession.*" %>
<head>
<style>
h2 {
    padding-left: 10px;
    padding-top: 20px;
    text-align: center;
}
</style>
<meta charset="UTF-8">
<title>Logged out</title>

```

```

</head>
<body>

    <% @ include file="header.jsp"%>

    <h2>You have logged out successfully. <br><br>
    <a href="index.jsp">Click here</a> to login again.</h2>

    <%
        HttpSession sess = request.getSession(false);
        if (sess != null) {
            session.invalidate();
        }
    %>

</body>
</html>

```

register.jsp

```

<% @ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
<head>
<style>
form {
    padding-top: 50px;
}
fieldset {
    text-align: center;
    border: 2px #01257D solid;
    overflow: auto;
}
legend {
    text-align: center;
    color: #01257D;
    font-size: 20px;
    font-weight: 700;
}
</style>

```

```

<meta charset="UTF-8">
<title>Register</title>
</head>
<body>
    <% @ include file="header.jsp"%>

    <form action="registercontroller" method="post" style = "width: 400px; margin:
0px auto;">
        <fieldset>
            <legend>Registration form</legend><br>
            Username : <input type="text" name="username"
required><br><br>
            Password : <input type="password" name="password"
required><br><br>
            <input type="submit" value="Submit">
        </fieldset>
    </form>
</body>
</html>

```

registrationsuccessful.jsp

```

<% @ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
<head>
<style>
h2 {
    padding-left: 10px;
    padding-top: 20px;
    text-align: center;
}
</style>
<meta charset="UTF-8">
<title>Registration Successful!</title>
</head>
<body>

    <% @ include file="header.jsp"%>

```

```
<h2>Your registration is successful. <br><br>
<a href="index.jsp">Click here</a> to login.</h2>
```

```
</body>
```

```
</html>
```

studentslist.jsp

```
<% @ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"%>
```

```
<!DOCTYPE html>
```

```
<html>
```

```
<% @ page import="java.util.List" %>
```

```
<% @ page import="mypackage.entities.Student" %>
```

```
<% @ page import="mypackage.dao.StudentDao" %>
```

```
<% @ page import="mypackage.daoimpl.StudentDaoImpl" %>
```

```
<head>
```

```
<style>
```

```
table {
```

```
    border-collapse: collapse;
```

```
    width: 50%;
```

```
    margin: auto;
```

```
}
```

```
th, td {
```

```
    border: 2px #01257D solid;
```

```
    text-align: center;
```

```
}
```

```
th {
```

```
    color: #333;
```

```
    font-weight: bold;
```

```
}
```

```
.head1 {
```

```
    color: #01257D;
```

```
    padding-top: 10px;
```

```
    padding-bottom: 10px;
```

```
    text-align: center;
```

```
}
```

```
</style>
```

```
<meta charset="UTF-8">
```

```
<title>Students List</title>
```

```
</head>
```



```

<body>
    <% @ include file="header.jsp"%>
    <%
        StudentDao studentDao = new StudentDaoImpl();
        List<Student> students = studentDao.getAll();
        request.setAttribute("students", students);
    %>
    <div class="head1">
        <h1> Students List </h1>
    </div>
    <table>
        <tr>
            <th> Student ID </th>
            <th> Student Name </th>
            <th> Student Address </th>
            <th> Assigned Class </th>
            <th> Actions </th>
        </tr>
        <% int sequence = 1; %>
        <%
            for(Student student : students) {
        %>
            <tr>
                <td><%= sequence %></td>
                <td><%= student.getStudent_name() %></td>
                <td><%= student.getAddress() %></td>
                <td><%= student.getClazzName() %></td>

                <td>
                    <form action="studentslist.jsp" method="POST">
                        <input type="hidden" name="sid"
value="<%= student.getStudent_id() %>">
                        <button type="submit" name="action"
value="delete">Delete</button>
                    </form>
                </td>
            </tr>
            <% sequence++; %>
        <%
            }

```

```

        %>
        <tr>
            <td colspan="5">
                <form action="addstudent.jsp" method="GET">
                    <button type="submit">Add
Student</button>
                </form>
            </td>
        </tr>
    </table>
    <%
        String action = request.getParameter("action");
        if (action != null && action.equals("delete")) {
            int sid = Integer.parseInt(request.getParameter("sid"));
            studentDao.delete(sid);
            response.sendRedirect("studentslist.jsp");
        }
    %>
</body>
</html>

```

subjectslist.jsp

```

<% @ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
<% @ page import="java.util.List" %>
<% @ page import="mypackage.entities.Subject" %>
<% @ page import="mypackage.dao.SubjectDao" %>
<% @ page import="mypackage.daoimpl.SubjectDaoImpl" %>
<head>
<style>
    table {
        border-collapse: collapse;
        width: 50%;
        margin: auto;
    }
    th, td {
        border: 2px #01257D solid;
        text-align: center;
    }

```

```

    }
    th {
        color: #333;
        font-weight: bold;
    }
    .head1 {
        color: #01257D;
        padding-top: 10px;
        padding-bottom: 10px;
        text-align: center;
    }
</style>

<meta charset="UTF-8">
<title>Subjects List</title>
</head>
<body>
    <% @ include file="header.jsp"%>
    <%
        SubjectDao subjectDao = new SubjectDaoImpl();
        List<Subject> subjects = subjectDao.getAll();
        request.setAttribute("subjects", subjects);
    %>
    <div class="head1">
        <h1> Subjects List </h1>
    </div>
    <table>
        <tr>
            <th> Subject ID </th>
            <th> Subject Name </th>
            <th> Subject Qualification </th>
            <th> Assigned Class </th>
            <th> Actions </th>
        </tr>
        <% int sequence = 1; %>
        <%
            for(Subject subject : subjects) {
        %>
            <tr>
                <td><%= sequence %></td>

```

```

        <td><%= subject.getSubject_name() %></td>
        <td><%= subject.getSubject_level() %></td>
        <td><%= subject.getClazzName() %></td>
        <td>
            <form action="subjectslist.jsp" method="POST">
                <input type="hidden" name="sid"
value="<%= subject.getSubject_id() %>">
                <button type="submit" name="action"
value="delete">Delete</button>
            </form>
        </td>
    </tr>
    <% sequence++; %>
<%
    }
%>
<tr>
    <td colspan="5">
        <form action="addsubject.jsp" method="GET">
            <button type="submit">Add
Subject</button>
        </form>
    </td>
</tr>
</table>
<%
    String action = request.getParameter("action");
    if (action != null && action.equals("delete")) {
        int sid = Integer.parseInt(request.getParameter("sid"));
        subjectDao.delete(sid);
        response.sendRedirect("subjectslist.jsp");
    }
%>
</body>
</html>

```

teacherslist.jsp

```

<% @ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"%>
<!DOCTYPE html>

```

```

<html>
<% @ page import="java.util.List" %>
<% @ page import="mypackage.entities.Teacher" %>
<% @ page import="mypackage.dao.TeacherDao" %>
<% @ page import="mypackage.daoimpl.TeacherDaoImpl" %>
<head>
<style>
table {
    border-collapse: collapse;
    width: 50%;
    margin: auto;
}
th, td {
    border: 2px #01257D solid;
    text-align: center;
}
th {
    color: #333;
    font-weight: bold;
}
.head1 {
    color: #01257D;
    padding-top: 10px;
    padding-bottom: 10px;
    text-align: center;
}
</style>

<meta charset="UTF-8">
<title>Teachers List</title>
</head>
<body>
    <% @ include file="header.jsp"%>
    <%
        TeacherDao teacherDao = new TeacherDaoImpl();
        List<Teacher> teachers = teacherDao.getAll();
        request.setAttribute("teachers", teachers);
    %>
    <div class="head1">
        <h1> Teachers List </h1>

```

```

</div>
    <table>
        <tr>
            <th> Teacher ID </th>
            <th> Teacher Name </th>
            <th> Teacher Qualification </th>
            <th> Actions </th>

        </tr>
        <% int sequence = 1; %>
        <%
            for(Teacher teacher : teachers) {
        %>
            <tr>
                <td><%= sequence %></td>
                <td><%= teacher.getTeacher_name() %></td>
                <td><%= teacher.getTeacher_qual() %></td>
                <td>
                    <form action="teacherslist.jsp" method="POST">
                        <input type="hidden" name="tid"
value="<%= teacher.getTeacher_id() %>">
                        <button type="submit" name="action"
value="delete">Delete</button>
                    </form>
                </td>
            </tr>
            <% sequence++; %>
        <%
            }
        %>
            <tr>
                <td colspan="4">
                    <form action="addteacher.jsp" method="GET">
                        <button type="submit">Add
Teacher</button>
                    </form>
                </td>
            </tr>
        </table>
        <%
            String action = request.getParameter("action");

```

```

        if (action != null && action.equals("delete")) {
            int tid = Integer.parseInt(request.getParameter("tid"));
            teacherDao.delete(tid);
            response.sendRedirect("teacherslist.jsp");
        }
    %>
</body>
</html>

```

viewclassreport.jsp

```

<% @page import="org.hibernate.internal.build.AllowSysOut"%>
<% @ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
<% @ page import="java.util.List"%>
<% @ page import="mypackage.entities.Student"%>
<% @ page import="mypackage.entities.Subject"%>
<% @ page import="mypackage.entities.Clazz"%>
<% @ page import="mypackage.entities.Teacher"%>
<% @ page import="mypackage.dao.ClazzDao"%>
<% @ page import="mypackage.daoimpl.ClazzDaoImpl"%>
<head>
<style>
table {
    border-collapse: collapse;
    width: 50%;
    margin: auto;
}

th, td {
    border: 2px #01257D solid;
    text-align: center;
}

th {
    color: #01257D;
    font-weight: bold;
}
td {

```

```

        color : #fff;
    }

.head1 {
    color: #01257D;
    padding-top: 10px;
    padding-bottom: 10px;
    text-align: center;
}
</style>
<meta charset="UTF-8">
<title>Class Report</title>
</head>
<body>
    <% @ include file="header.jsp"%>

    <%
ClazzDao clazzDao = new ClazzDaoImpl();
List<Clazz> clazzes = clazzDao.getAll();
request.setAttribute("clazzes", clazzes);
%>
    <div class="head1">
        <h1>Class Report</h1>
    </div>
    <table>
        <tr>
            <th>Student ID</th>
            <th>Student Name</th>
            <th>Assigned Subject</th>
            <th>Assigned Class</th>
            <th>Assigned Teacher</th>
        </tr>
        <%
int sequence = 1;
%>
        <%
for (Clazz clazz : clazzes) {
%>
            <tr>
                <td><%= sequence %></td>

```



```

        <td>
            <%
                for (Student student : clazz.getStudents()) {
                    out.println(student.getStudent_name() + "<br>");
                }
            %>
        </td>
        <td>
            <%
                for (Subject subject : clazz.getSubjects()) {
                    out.println(subject.getSubject_name() + " " + subject.getSubject_level()+
"<br>");
                }
            %>
        </td>
        <td><%= clazz.getClass_name() %></td>
        <td>
            <%
                for (Teacher teacher : clazz.getTeachers()) {
                    out.println(teacher.getTeacher_name() + "<br>");
                }
            %>
        </td>
    </tr>
    <%
        sequence++;
    %>
    <%
    }
    %>
</table>
</body>
</html>

```

[home-styles.css](#)

```
@charset "UTF-8";
```

```
.heading {
    text-align:center;
    color:#01257D;
```

```
margin-top: 25px;  
margin-bottom: 25px;  
font-size: 24px;  
}
```

```
.column-3 {  
float: left;  
width: 25%;  
padding: 10px;  
margin: 20px;  
height: 150px;  
}
```

```
.tiles {  
padding-left: 150px;  
}
```

```
.option-1 {  
background-color: #01257D;  
}
```

```
.option-2 {  
background-color: #01257D;  
}
```

```
.option-3 {  
background-color: #01257D;  
}
```

```
.option-4 {  
background-color: #01257D;  
}
```

```
.option-5 {  
background-image: url('laptop-open-book-assortment.jpg');  
background-size: cover;  
background-position: center;  
}
```

```
.option-6 {  
background-color: #01257D;  
}
```

```
.option-text {  
text-align: center;
```

```

font-size:30px;
color: white;
}

.option-1:hover {
background-color:#98c1d9;
}
.option-2:hover {
background-color: #98c1d9;
}
.option-3:hover {
background-color:#98c1d9;
}
.option-4:hover {
background-color: #98c1d9;
}
.option-6:hover {
background-color: #98c1d9;
}

```

6. Creating Controller java servlets

- Create a package ‘mypackage.controllers’ in Java Resources.
- Create java servlets ClazzController.java, LoginController.java, RegisterController.java, StudentController.java, SubjectController.java and TeacherController.java.

ClazzController.java

```

package mypackage.controllers;

import java.io.IOException;

import javax.servlet.RequestDispatcher;
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.servlet.http.HttpSession;

import mypackage.entities.Admin;
import mypackage.models.ClazzModel;
import mypackage.serviceimpl.ClazzServiceImpl;

```

```

import mypackage.services.ClazzService;

@WebServlet("/clazzcontroller")
public class ClazzController extends HttpServlet {
    private static final long serialVersionUID = 1L;

    private ClazzService clazzService = new ClazzServiceImpl();

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

        String clazzName = request.getParameter("clazzname");
        ClazzModel clazzModel = new ClazzModel(clazzName);
        HttpSession session = request.getSession();
        Admin admin = (Admin) session.getAttribute("admin");
        clazzService.addClazz(admin, clazzModel);
        RequestDispatcher rd = request.getRequestDispatcher("clazzlist.jsp");
        rd.forward(request, response);
    }
}

```

LoginController.java

```

package mypackage.controllers;

import java.io.IOException;
import javax.servlet.RequestDispatcher;
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.servlet.http.HttpSession;

import mypackage.entities.Admin;
import mypackage.models.LoginModel;
import mypackage.serviceimpl.AdminServiceImpl;
import mypackage.services.AdminService;

@WebServlet("/logincontroller")
public class LoginController extends HttpServlet {

```

```

private static final long serialVersionUID = 1L;

private AdminService adminService = new AdminServiceImpl();
protected void doPost(HttpServletRequest request, HttpServletResponse
response) throws ServletException, IOException {

    String username = request.getParameter("username");
    String password = request.getParameter("password");

    LoginModel loginModel = new LoginModel();
    loginModel.setUsername(username);
    loginModel.setPassword(password);
    Admin admin = adminService.getAdmin(loginModel);
    if(admin != null) {
        HttpSession session = request.getSession();
        session.setAttribute("admin", admin);
        RequestDispatcher rd =
request.getRequestDispatcher("home.jsp");
        rd.forward(request, response);
    }
    else
        response.sendRedirect("invalidcred.jsp");
}
}

```

RegisterContoller.java

```

package mypackage.controllers;

import java.io.IOException;
import javax.servlet.RequestDispatcher;
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 mypackage.models.AdminModel;
import mypackage.serviceimpl.AdminServiceImpl;
import mypackage.services.AdminService;

@WebServlet("/registercontroller")

```

```

public class RegisterController extends HttpServlet {
    private static final long serialVersionUID = 1L;

    private AdminService adminService = new AdminServiceImpl();

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

        String username = request.getParameter("username");
        String password = request.getParameter("password");

        AdminModel adminModel = new AdminModel(username, password);
        adminService.register(adminModel);
        RequestDispatcher rd =
request.getRequestDispatcher("registrationsuccessful.jsp");
        rd.forward(request, response);

    }

}

```

StudentController.java

```

package mypackage.controllers;

import java.io.IOException;

import javax.servlet.RequestDispatcher;
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.servlet.http.HttpSession;

import mypackage.entities.Admin;
import mypackage.models.StudentModel;
import mypackage.serviceimpl.StudentServiceImpl;
import mypackage.services.StudentService;

@WebServlet("/studentcontroller")
public class StudentController extends HttpServlet {

```

```

private static final long serialVersionUID = 1L;

private StudentService studentService = new StudentServiceImpl();

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

    String studentName = request.getParameter("studentname");
    String studentAddress = request.getParameter("studentaddress");
    String clazzName = request.getParameter("clazzname");

    StudentModel studentModel = new StudentModel(studentName,
studentAddress, clazzName);
    HttpSession session = request.getSession();
    Admin admin = (Admin) session.getAttribute("admin");
    studentService.addStudent(admin, studentModel);
    RequestDispatcher rd = request.getRequestDispatcher("studentslist.jsp");
    rd.forward(request, response);
}
}

```

SubjectController.java

```

package mypackage.controllers;

import java.io.IOException;

import javax.servlet.RequestDispatcher;
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.servlet.http.HttpSession;

import mypackage.dao.ClazzDao;
import mypackage.daoimpl.ClazzDaoImpl;
import mypackage.entities.Admin;
import mypackage.entities.Clazz;
import mypackage.models.SubjectModel;
import mypackage.serviceimpl.SubjectServiceImpl;

```

```

import mypackage.services.SubjectService;

@WebServlet("/subjectcontroller")
public class SubjectController extends HttpServlet {
    private static final long serialVersionUID = 1L;

    private SubjectService subjectService = new SubjectServiceImpl();

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

        String subjectName = request.getParameter("subjectname");
        String subjectLevel = request.getParameter("subjectlevel");
        String clazName = request.getParameter("clazname");

        SubjectModel subjectModel = new SubjectModel(subjectName, subjectLevel,
        clazName);
        HttpSession session = request.getSession();
        Admin admin = (Admin) session.getAttribute("admin");
        subjectService.addSubject(admin, subjectModel);

        RequestDispatcher rd = request.getRequestDispatcher("subjectslist.jsp");
        rd.forward(request, response);
    }
}

```

TeacherContoller.java

```

package mypackage.controllers;

import java.io.IOException;

import javax.servlet.RequestDispatcher;
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.servlet.http.HttpSession;

import mypackage.entities.Admin;
import mypackage.models.TeacherModel;

```



```

import mypackage.serviceimpl.TeacherServiceImpl;
import mypackage.services.TeacherService;

@WebServlet("/teachercontroller")
public class TeacherController extends HttpServlet {
    private static final long serialVersionUID = 1L;

    private TeacherService teacherService = new TeacherServiceImpl();

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

        String teacherName = request.getParameter("teachername");
        System.out.println(teacherName);
        String qualification = request.getParameter("qualification");
        System.out.println(qualification);
        String clazzName = request.getParameter("clazzname");
        System.out.println(clazzName);

        TeacherModel teacherModel = new TeacherModel(teacherName,
qualification, clazzName);
        HttpSession session = request.getSession();
        Admin admin = (Admin) session.getAttribute("admin");
        teacherService.addTeacher(admin, teacherModel);

        RequestDispatcher rd = request.getRequestDispatcher("teacherslist.jsp");
        rd.forward(request, response);
    }
}

```

7. Creating Model classes

- Create a package 'mypackage.models' in Java Resources.
- Create java classes AdminModel.java, ClazzModel.java, LoginModel.java, StudentModel.java, SubjectModel.java and TeacherModel.java.

AdminModel.java

```

package mypackage.models;

public class AdminModel {

```

```

private String username;
private String password;

public AdminModel() {
    // TODO Auto-generated constructor stub
}

public AdminModel(String username, String password) {
    super();
    this.username = username;
    this.password = password;
}

// Getters and Setters
public String getUsername() {
    return username;
}

public void setUsername(String username) {
    this.username = username;
}

public String getPassword() {
    return password;
}

public void setPassword(String password) {
    this.password = password;
}
}

```

ClazzModel.java

```

package mypackage.models;

public class ClazzModel {

    private String name;

```

```
public ClazzModel() {  
    // TODO Auto-generated constructor stub  
}  
  
public ClazzModel(String name) {  
    super();  
    this.name = name;  
}  
  
public String getName() {  
    return name;  
}  
  
public void setName(String name) {  
    this.name = name;  
}  
}
```

LoginModel.java

```
package mypackage.models;  
  
public class LoginModel {  
  
    private String username;  
    private String password;  
  
    public LoginModel() {  
        // TODO Auto-generated constructor stub  
    }  
  
    public LoginModel(String username, String password) {  
        super();  
        this.username = username;  
        this.password = password;  
    }  
  
    public String getUsername() {  
        return username;  
    }  
}
```

```
        public void setUsername(String username) {
            this.username = username;
        }

        public String getPassword() {
            return password;
        }

        public void setPassword(String password) {
            this.password = password;
        }
    }
}
```

StudentModel.java

```
package mypackage.models;

public class StudentModel {

    private String name;
    private String address;
    private String cid;

    public StudentModel() {
        // TODO Auto-generated constructor stub
    }

    public StudentModel(String name, String address, String cid) {
        super();
        this.name = name;
        this.address = address;
        this.cid = cid;
    }

    public String getName() {
        return name;
    }

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

```

    }

    public String getAddress() {
        return address;
    }

    public void setAddress(String address) {
        this.address = address;
    }

    public String getCid() {
        return cid;
    }

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

```

SubjectModel.java

```

package mypackage.models;

public class SubjectModel {

    private String name;
    private String level;
    private String cid;

    public SubjectModel() {
        // TODO Auto-generated constructor stub
    }

    public SubjectModel(String name, String level, String cid) {
        super();
        this.name = name;
        this.level = level;
        this.cid = cid;
    }

    public String getName() {

```

```

        return name;
    }

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

    public String getLevel() {
        return level;
    }

    public void setLevel(String level) {
        this.level = level;
    }

    public String getCid() {
        return cid;
    }

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

```

TeacherModel.java

```

package mypackage.models;

public class TeacherModel {

    private String name;
    private String qualification;
    private String cid;

    public TeacherModel() {
        // TODO Auto-generated constructor stub
    }

    public TeacherModel(String name, String qualification, String cid) {
        super();
        this.name = name;
    }
}

```

```

        this.qualification = qualification;
        this.cid = cid;
    }

    public String getName() {
        return name;
    }

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

    public String getQualification() {
        return qualification;
    }

    public void setQualification(String qualification) {
        this.qualification = qualification;
    }

    public String getCid() {
        return cid;
    }

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

```

8. Creating Service interfaces

- Create a package 'mypackage.services' in Java Resources.
- Create interfaces AdminService.java, ClazzService.java, StudentService.java, SubjectService.java and TeacherService.java.
- Declare methods that define the operations to be performed on the corresponding models.

AdminService.java

```

package mypackage.services;

import mypackage.entities.Admin;

```

```
import mypackage.models.AdminModel;
import mypackage.models.LoginModel;

public interface AdminService {

    void register(AdminModel adminModel);
    Admin getAdmin(LoginModel loginModel);
}
```

ClazzService.java

```
package mypackage.services;

import mypackage.entities.Admin;
import mypackage.models.ClazzModel;

public interface ClazzService {

    void addClazz(Admin admin, ClazzModel clazzModel);
}
```

StudentService.java

```
package mypackage.services;

import mypackage.entities.Admin;
import mypackage.models.StudentModel;

public interface StudentService {

    void addStudent(Admin admin, StudentModel studentModel);
}
```

SubjectService.java

```
package mypackage.services;

import mypackage.entities.Admin;
import mypackage.models.SubjectModel;

public interface SubjectService {

    void addSubject(Admin admin, SubjectModel subjectModel);
}
```



```
}
```

TeacherService.java

```
package mypackage.services;

import mypackage.entities.Admin;
import mypackage.models.TeacherModel;

public interface TeacherService {

    void addTeacher(Admin admin, TeacherModel teacherModel);

}
```

9. Creating ServiceImpl classes

- Create a package 'mypackage.serviceimpl' in Java Resources.
- Create java classes AdminServiceImpl.java, ClazzServiceImpl.java, StudentServiceImpl.java, SubjectServiceImpl.java and TeacherServiceImpl.java.
- Implement the methods declared in each service interface.

AdminServiceImpl.java

```
package mypackage.serviceimpl;

import mypackage.dao.AdminDao;
import mypackage.daoimpl.AdminDaoImpl;
import mypackage.entities.Admin;
import mypackage.models.AdminModel;
import mypackage.models.LoginModel;
import mypackage.services.AdminService;

public class AdminServiceImpl implements AdminService{

    private AdminDao dao = new AdminDaoImpl();

    @Override
    public void register(AdminModel adminModel) {

        Admin admin = new Admin();
        admin.setUsername(adminModel.getUsername());
    }
}
```

```

        admin.setPassword(adminModel.getPassword());
        dao.insert(admin);
    }

    @Override
    public Admin getAdmin(LoginModel loginModel) {

        return dao.getAdmin(loginModel.getUsername(),
loginModel.getPassword());
    }

}

```

ClazzServiceImpl.java

```

package mypackage.serviceimpl;

import mypackage.dao.AdminDao;
import mypackage.dao.ClazzDao;
import mypackage.daoimpl.AdminDaoImpl;
import mypackage.daoimpl.ClazzDaoImpl;
import mypackage.entities.Admin;
import mypackage.entities.Clazz;
import mypackage.models.ClazzModel;
import mypackage.services.ClazzService;

public class ClazzServiceImpl implements ClazzService {

    private ClazzDao clazzDao = new ClazzDaoImpl();
    private AdminDao adminDao = new AdminDaoImpl();

    @Override
    public void addClazz(Admin admin, ClazzModel clazzModel) {

        try {
            Admin adm = adminDao.getAdmin(admin.getUsername(),
admin.getPassword());

            Clazz clazz = new Clazz();

```

```

        clazz.setClazz_name(clazzModel.getName());
        clazz.setAdmin(adm);

        adm.addClazz(clazz);
        clazzDao.add(clazz);
    } catch (Exception e) {
        // TODO Auto-generated catch block
        e.printStackTrace();
    }
}
}

```

StudentServiceImpl.java

```

package mypackage.serviceimpl;

import mypackage.dao.AdminDao;
import mypackage.dao.ClazzDao;
import mypackage.dao.StudentDao;
import mypackage.daoimpl.AdminDaoImpl;
import mypackage.daoimpl.ClazzDaoImpl;
import mypackage.daoimpl.StudentDaoImpl;
import mypackage.entities.Admin;
import mypackage.entities.Clazz;
import mypackage.entities.Student;
import mypackage.models.StudentModel;
import mypackage.services.StudentService;

public class StudentServiceImpl implements StudentService{

    private StudentDao studentDao = new StudentDaoImpl();
    private AdminDao adminDao = new AdminDaoImpl();
    private ClazzDao clazzDao = new ClazzDaoImpl();

    @Override
    public void addStudent(Admin admin, StudentModel studentModel) {

        try {
            Admin adm = adminDao.getAdmin(admin.getUsername(),
admin.getPassword());

```

```

        Clazz clazz =
clazzDao.getClazzById(Integer.parseInt(studentModel.getCid()));
        Student student = new Student();
        student.setStudent_name(studentModel.getName());
        student.setAddress(studentModel.getAddress());
        student.setAdmin(admin);
        student.setClazz(clazz);

        admin.addStudent(student);
        studentDao.add(student);
    } catch (Exception e) {
        // TODO Auto-generated catch block
        e.printStackTrace();
    }
}
}

```

SubjectServiceImpl.java

```

package mypackage.serviceimpl;

import mypackage.dao.AdminDao;
import mypackage.dao.ClazzDao;
import mypackage.dao.SubjectDao;
import mypackage.daoimpl.AdminDaoImpl;
import mypackage.daoimpl.ClazzDaoImpl;
import mypackage.daoimpl.SubjectDaoImpl;
import mypackage.entities.Admin;
import mypackage.entities.Clazz;
import mypackage.entities.Subject;
import mypackage.models.SubjectModel;
import mypackage.services.SubjectService;

public class SubjectServiceImpl implements SubjectService {

    private SubjectDao subjectDao = new SubjectDaoImpl();
    private AdminDao adminDao = new AdminDaoImpl();
    private ClazzDao clazzDao = new ClazzDaoImpl();

    @Override
    public void addSubject(Admin admin, SubjectModel subjectModel) {

```

```

        try {
            Admin adm = adminDao.getAdmin(admin.getUsername(),
admin.getPassword());

            Clazz clazz =
clazzDao.getClazzById(Integer.parseInt(subjectModel.getCid()));
            Subject subject = new Subject();
            subject.setSubject_name(subjectModel.getName());
            subject.setSubject_level(subjectModel.getLevel());
            subject.setAdmin(adm);
            subject.setClazz(clazz);

            adm.addSubject(subject);
            subjectDao.add(subject);
        } catch (Exception e) {
            // TODO Auto-generated catch block
            e.printStackTrace();
        }
    }
}

```

TeacherServiceImpl.java

```

package mypackage.serviceimpl;

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

import mypackage.dao.AdminDao;
import mypackage.dao.ClazzDao;
import mypackage.dao.TeacherDao;
import mypackage.daoimpl.AdminDaoImpl;
import mypackage.daoimpl.ClazzDaoImpl;
import mypackage.daoimpl.TeacherDaoImpl;
import mypackage.entities.Admin;
import mypackage.entities.Clazz;
import mypackage.entities.Teacher;
import mypackage.models.TeacherModel;
import mypackage.services.TeacherService;

```

```

public class TeacherServiceImpl implements TeacherService {

    private AdminDao adminDao = new AdminDaoImpl();
    private TeacherDao teacherDao = new TeacherDaoImpl();
    private ClazzDao clazzDao = new ClazzDaoImpl();

    @Override
    public void addTeacher(Admin admin, TeacherModel teacherModel) {

        try {
            Admin adm = adminDao.getAdmin(admin.getUsername(),
admin.getPassword());

            Clazz clazz =
clazzDao.getClazzById(Integer.parseInt(teacherModel.getCid()));
            Teacher teacher = new Teacher();
            teacher.setTeacher_name(teacherModel.getName());
            teacher.setTeacher_qual(teacherModel.getQualification());
            teacher.setAdmin(adm);

            Set<Clazz> clazzSet = new HashSet<>();
            clazzSet.add(clazz);
            teacher.setClazzes(clazzSet);

            adm.addTeacher(teacher);
            teacherDao.add(teacher);
        } catch (Exception e) {
            // TODO Auto-generated catch block
            e.printStackTrace();
        }
    }
}

```

10. Creating Filter

- Create a package 'mypackage.filters' in Java Resources.
- Create a filter HeaderHomeFilter.java which blocks anyone from accessing the website through home button from header without logging in.

HeaderHomeFilter.java

```

package mypackage.filters;

import javax.servlet.*;
import javax.servlet.annotation.WebFilter;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
import javax.servlet.http.HttpSession;
import java.io.IOException;

@WebFilter("/*")
public class HeaderHomeFilter implements Filter {

    public void init(FilterConfig fConfig) throws ServletException {
    }

    public void doFilter(ServletRequest request, ServletResponse response, FilterChain
chain) throws IOException, ServletException {
        HttpServletRequest httpRequest = (HttpServletRequest) request;
        HttpServletResponse httpResponse = (HttpServletResponse) response;

        HttpSession session = httpRequest.getSession(false);

        // Check if the session is null or invalid
        if (session == null || session.isNew()) {
            // Redirect to index.jsp unless it is already the requested page
            String requestedPage = httpRequest.getRequestURI();
            if (!requestedPage.endsWith("index.jsp")) {
                httpResponse.sendRedirect("index.jsp");
                return;
            }
        }

        chain.doFilter(request, response);
    }

    public void destroy() {
    }
}

```

