Experiment -9

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Subject Name: PBLJ **Subject Code: 22CSH-359**

1. **Aim:** To demonstrate dependency injection using Spring Framework with Java-based configuration.

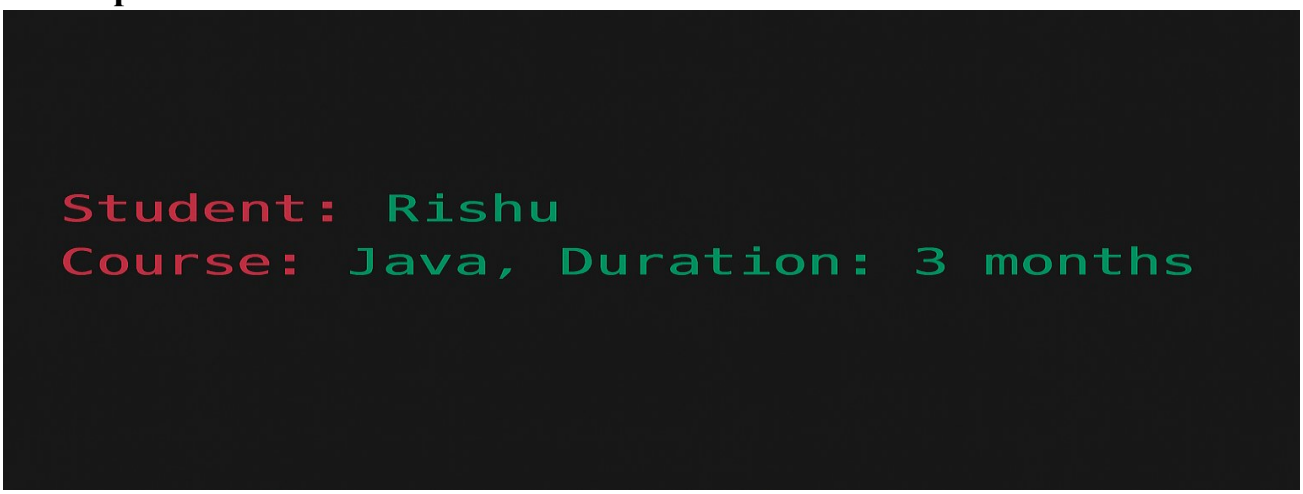
2. **Objective:**
   Define Course and Student classes.
   Use Configuration and Bean annotations to inject dependencies. Load Spring context and print student details.

3. **Code:**

```
// Course.java
public class Course {
 privateString courseName;
private String duration;
public Course(String courseName, String duration) {
 this.courseName = courseName;
 this.duration = duration;
 }
      public String getCourseName() { return courseName; }
      public String getDuration() { return duration; }
 @Override
 public String toString() {
  return "Course: " + courseName + ", Duration: " + duration;
 }
}
// Student.java public class
Student {
private String name;
private Course course;
 public Student(String name,
Course course) {
 this.name = name;
this.course = course;
 }
```

```
    public void showDetails() {
        System.out.println("Student: " + name);
         System.out.println(course);
    }
}
// AppConfig.java
import org.springframework.context.annotation.*;

@Configuration public class
AppConfig {
    @Bean
    public Course course() {
        return new Course("Java", "3 months");
    }
    @Bean
    public Student student() {
        return new Student("Rishu", course());
    }
}
// MainApp.java
import org.springframework.context.ApplicationContext;
import org.springframework.context.annotation.AnnotationConfigApplicationContext;

public class MainApp {
public static void main(String[] args) {
 ApplicationContext context = new
AnnotationConfigApplicationContext(AppConfig.class);
Student student = context.getBean(Student.class);
student.showDetails();
    } }
```

4. Output:



2.1. Aim: Develop a Hibernate-based application to perform CRUD (Create, Read, Update, Delete) operations on a Student entity using Hibernate ORM with MySQL.

Objective: Define Course and Student classes.

Use Configuration and Bean annotations to inject dependencies.

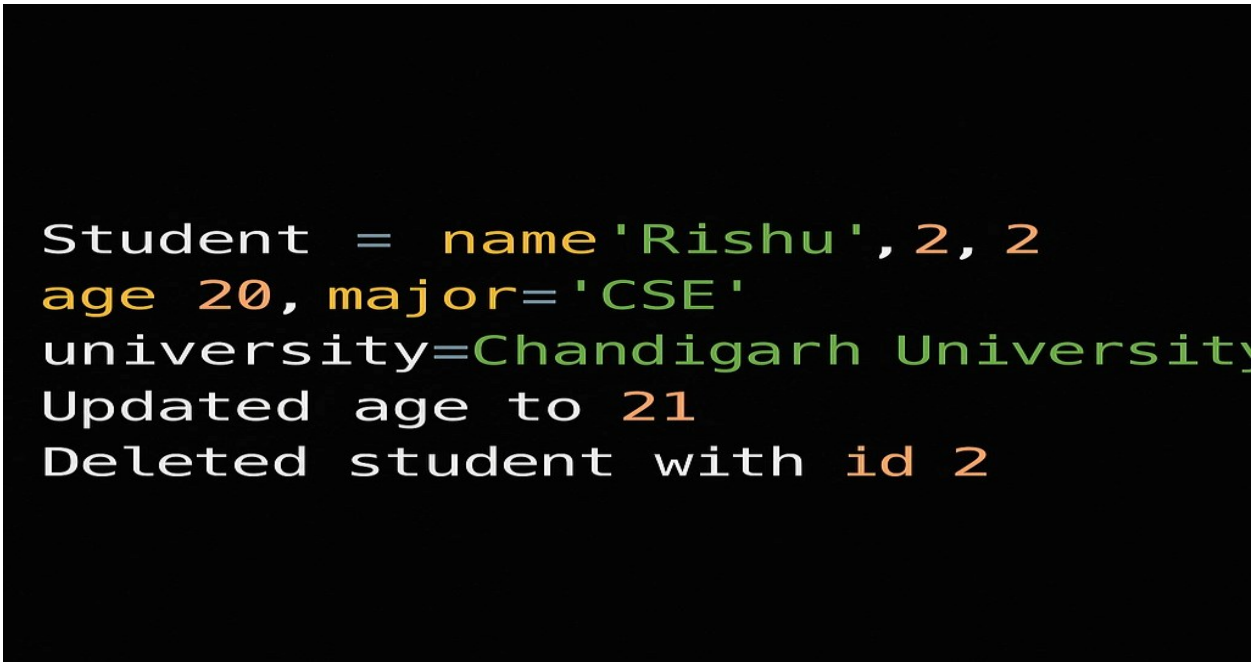
Load Spring context and print student details.

2.2. Code:

```
        <hibernate-configuration>
          <session-factory>
            <property
name="hibernate.connection.driver_class">com.mysql.cj.jdbc.Driver</property>
            <property
name="hibernate.connection.url">jdbc:mysql://localhost:3306/testdb</property>
            <property name="hibernate.connection.username">root</property>
            <property name="hibernate.connection.password">password</property>
            <property name="hibernate.dialect">org.hibernate.dialect.MySQL8Dialect</property>
            <property name="hibernate.hbm2ddl.auto">update</property>
            <mapping class="Student"/>
          </session-factory>
        </hibernate-configuration>

import javax.persistence.*;

Entity
public class Student {
   Id
   GeneratedValue(strategy = GenerationType.IDENTITY)     private
int id;     private String name;
   private int age;

   public Student() {}
   public Student(String name, int age) {
this.name = name;
this.age = age;
   }
   // Getters, setters, toString
} import org.hibernate.SessionFactory;
import org.hibernate.cfg.Configuration;
public class HibernateUtil {
```

```
    private static final SessionFactory sessionFactory;

     static
{
        sessionFactory = new Configuration().configure().buildSessionFactory();
    }
    public static SessionFactory getSessionFactory() {
        return sessionFactory;
    }
}
import org.hibernate.*;

public class MainCRUD {
    public static void main(String[] args) {
        Session session = HibernateUtil.getSessionFactory().openSession();

        // Create
        Transaction tx = session.beginTransaction();
Student s1 = new Student("Rishu", 20);
        session.save(s1);
        tx.commit();

        // Read
        Student student = session.get(Student.class, 1);
        System.out.println(student);

        // Update
        tx = session.beginTransaction();
student.setAge(21);

session.update(student);
tx.commit();

        // Delete
        tx = session.beginTransaction();
session.delete(student);

          tx.commit();
          session.close();
      }
  }
```

2.3. Output:-


Student = name'Rishu',2, 2
age 20, major='CSE'
university=Chandigarh University
Updated age to 21
Deleted student with id 2