Spring Framework

Spring is a Java Framework is used to develop variety applications like desktop, web, enterprise, mobile, cloud and etc.

Framework: It is like a semi project which will have all the common features required in every application, the common feature every application needs are:

1. Type Conversion
2. Exception Handling
3. Security
4. Transaction
5. Design Patterns
6. Internationalization

Framework enables developers to quickly create the complex applications, any body can understand the application if it is using framework as it will be structured and follows lot of design principles.

Spring Framework has many modules

1. Spring Core: Base module
2. Spring MVC: Web/REST based applications
3. Spring JDBC: Interact with the database
4. Spring AOP: Aspect Oriented Programming
5. Spring Boot
6. Spring Microservices

Spring Core:

It mainly concentrates on the dependency injection feature

Dependency Injection: It is a process of supplying the dependent object to other objects, i.e., creating objects & supplying to other objects

In spring framework you will use an XML configuration where you write all the bean configurations, based on the bean configurations the spring container creates the object

beans.xml

<bean id = “b1” class = “com.A”> </bean>  
<bean id = “b2” class = “com.B”> </bean>  
<bean id = “b3” class = “com.C”> </bean>

Above configuration allows spring to create 3 objects i.e., A, B & C

beans.xml

<bean id = “d” class = “com.DAO1”> </bean>  
<bean id = “s” class = “com.Service1”>  
 <property name = “dao” ref = “d”>

</bean>

Assume Service1 has a property dao of a DAO type (interface type) and DAO1 is implementing the DAO, then the above configuration supplies the DAO1 to the dao property of Service1.

This process of Dependency Injection is also called as IoC (Inversion of Control)

IoC: Inversion of Control is the process of reversing the control of object creation i.e., container is creating the object and passing it to other objects

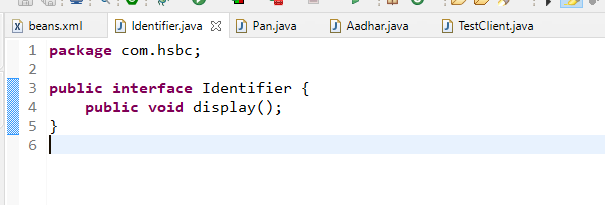
Note: You need to use maven project because you need spring libraries some of the important libraries are

* spring context
* spring webmvc
* spring jdbc

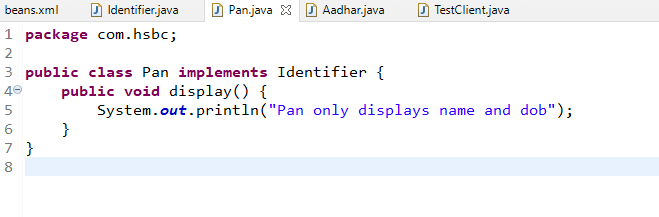
pom.xml



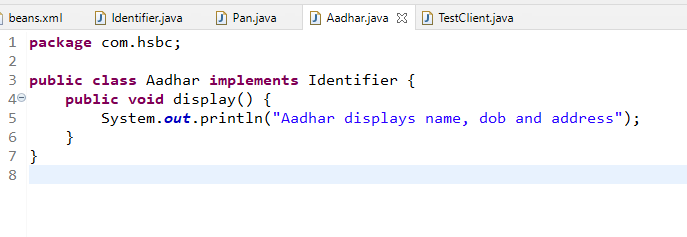
Identifier.java



Pan.java



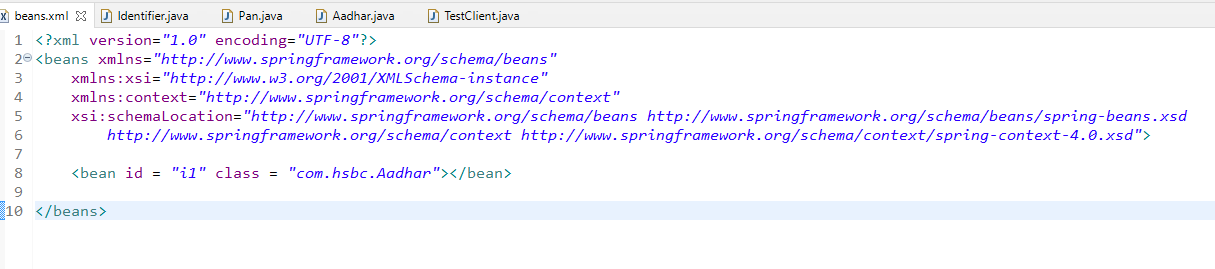
Aadhar.java



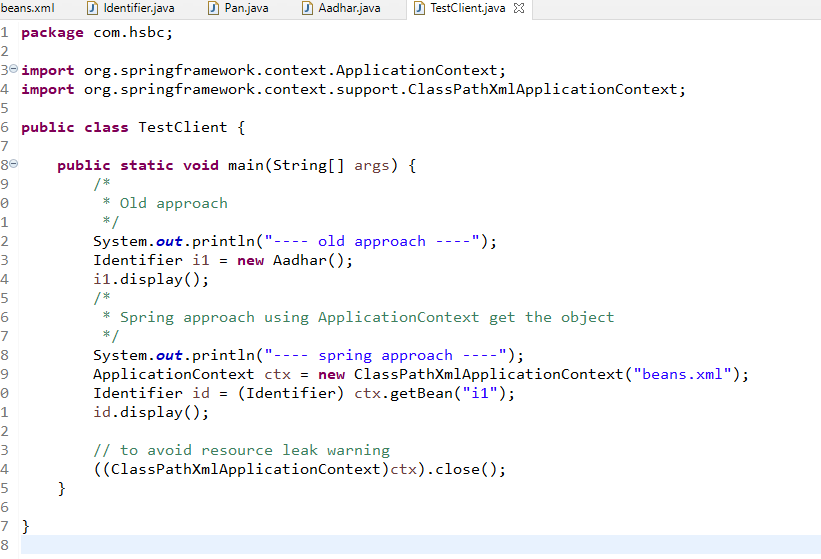
Bean configuration file

You need to keep the xml file in the classpath i.e., src folder

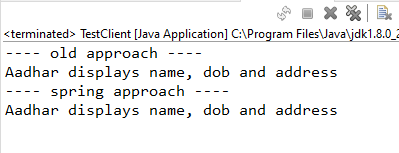
beans.xml



TestClient.java



Output:

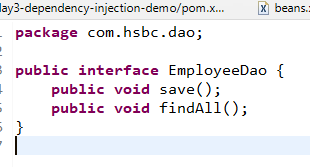


Types of Dependency Injection

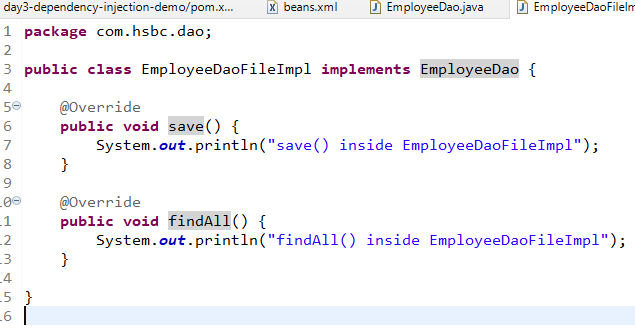
We have 2 types

1. Setter Injection <property>
2. Constructor Injection <constructor-arg>

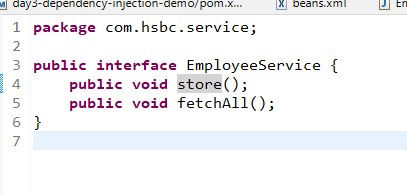
EmployeeDao.java



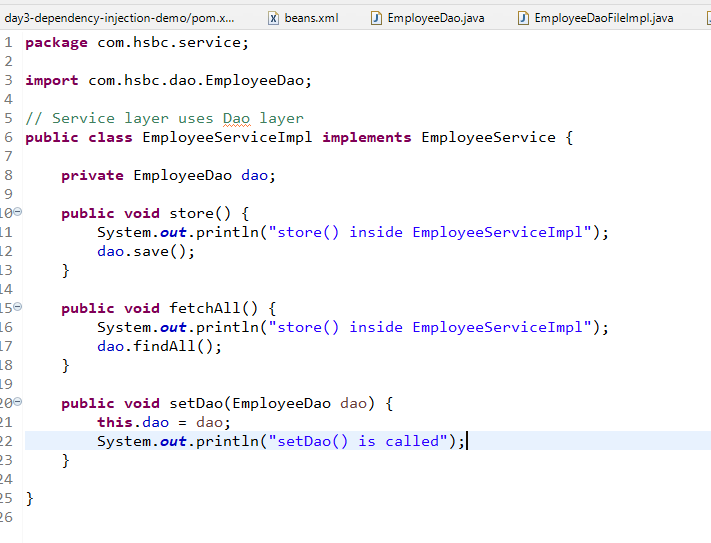
EmployeeDaoFileImpl.java



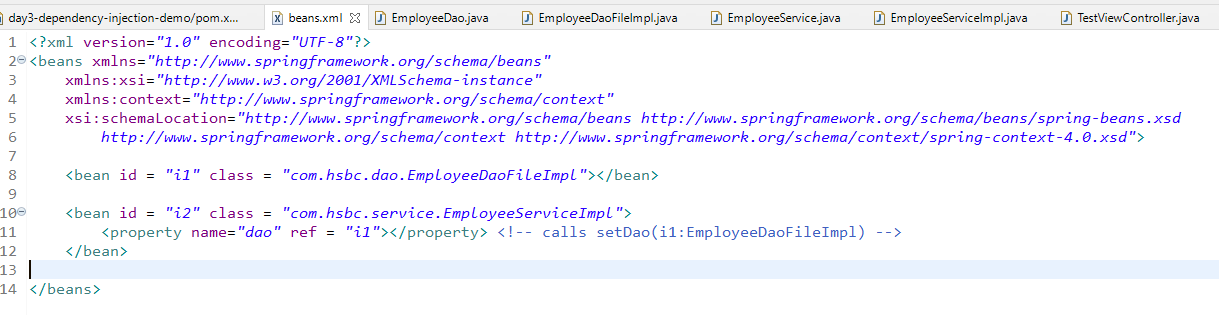
EmployeeService.java



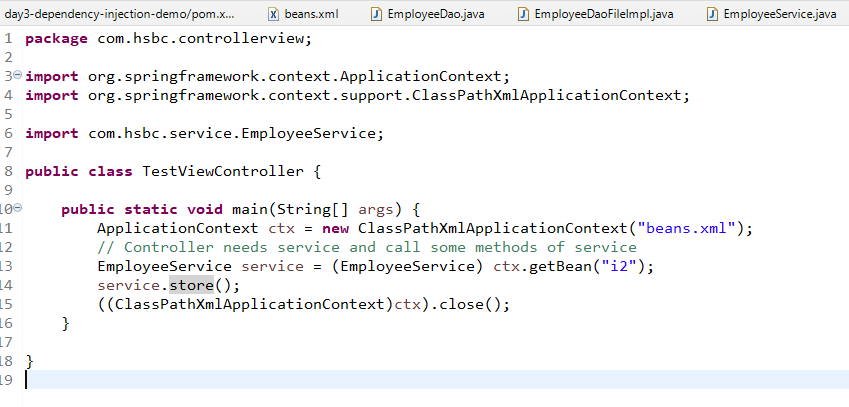
EmployeeServiceImpl.java



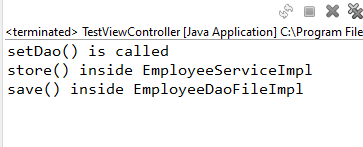
beans.xml



TestViewController.java



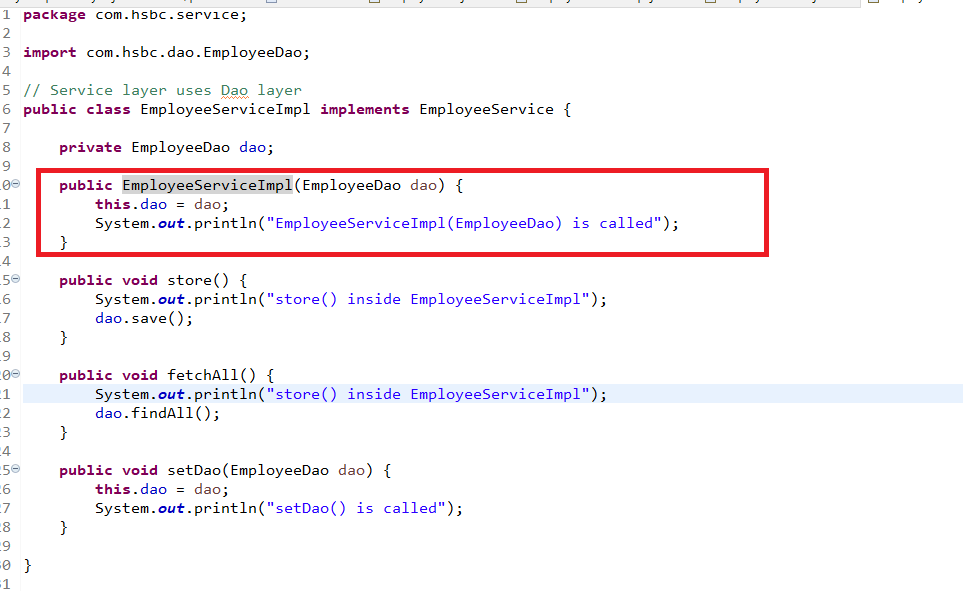
Output:



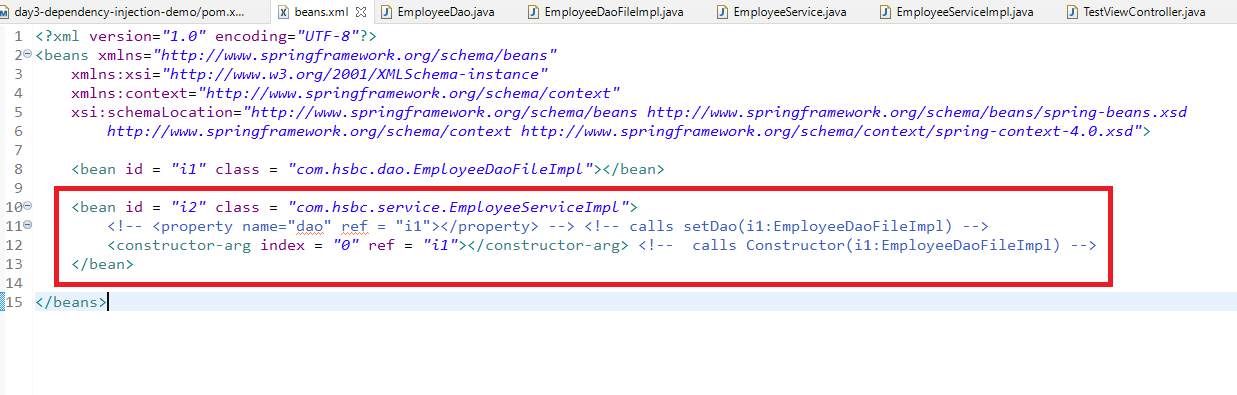
Constructor Injection

It is done when you want spring to pass the dependencies through the constructor parameter, the tag we need to use is <constructor-arg> and index attribute specifies the parameter position starting from 0

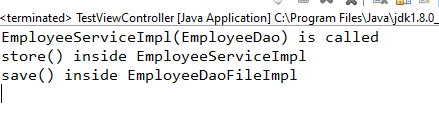
EmployeeServiceImpl



beans.xml



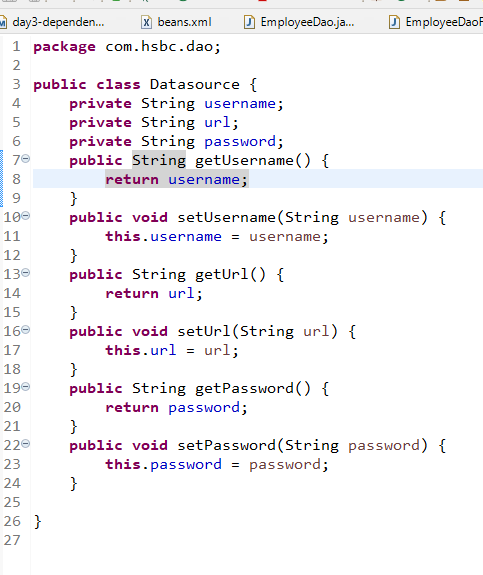
Output:



Note: when your bean class has more than one properties then you can use one or more <propery> or <constructor-arg> tags depending on the class structure

Passing values instead of objects also possible in dependency injection

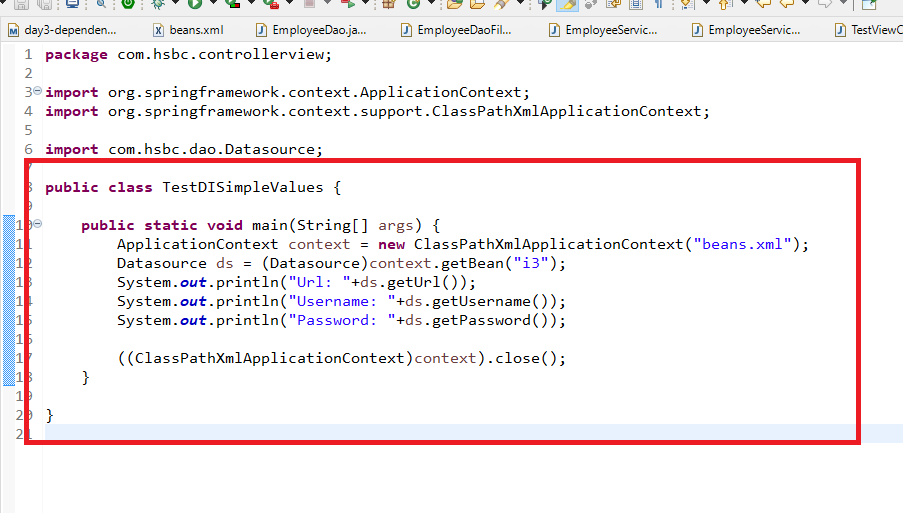
Datasource.java



beans.xml



TestDISimpleValues.java



Output:

