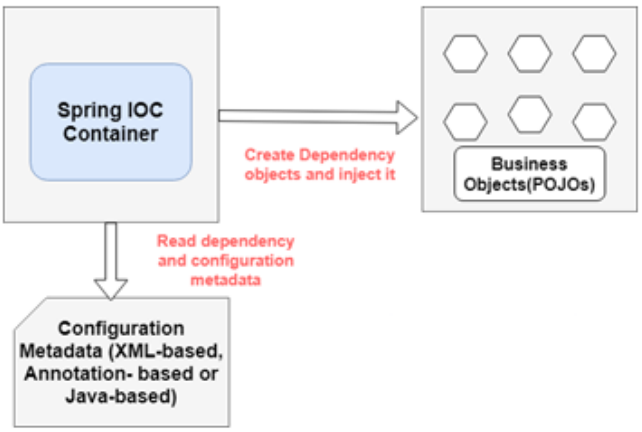
What is Spring ?
An open source framework since February 2003.
Created by Rod Johnson

Why Spring is a framework ?
Spring allows you to configure and compose complex applications
from simpler components.
In Spring, application objects are composed declaratively,
typically in an XML file or using annotations.
Spring also provides you with ready made implemetations of services like -
transaction management, persistence framework,web mvc etc.

Spring as a Container ?
Spring is a container which manages
the lifecycle and configuration of application objects.(spring beans)
In Spring, using config XMLs or annotations or java config, you can
declare - how to create each of your application objects(spring beans)
- how to configure them
-how they should be associated with each other.
(collaboration/wiring/coupling=connecting dependencies with dependent objs)



What is bean in spring?
A bean is an object which is instantiated, assembled, and managed by a Spring IOC container. These beans are created with the spring XMLconfiguration file that you given to the IOC container at the time of creating BeanFactory or ApplicationContext.
Beans are use to configure database connection parameters, security etc in spring XML Configuration file. Beans are use to avoid hard coding. Beans are use to manage the dependency of related class objects in context of IOC Container.

How to create bean in spring?

Here id you have to pass in main class at the time of creating BeanFactory or ApplicationContext.

And You have to pass fully qualified class path and name in main class.

Bean Lifecycle:

A “Spring bean” is just a Spring-managed instantiation of a Java class.

The Spring IoC container is responsible for instantiating, initializing, and wiring beans.

The container also manages the life cycle of beans.

Bean scope in spring:

In spring framework all bean has a scope , means every bean has its own visibility.

When we declare a class as a bean then by default the bean will be created under singleton scope.

How many types of bean scope

1. Singleton
2. Prototype
3. Request
4. Session
5. Global Session

IOC container :

IOC Container is a principle which is use to manage and collaborate life cycle of object and it is

responsible to instantiate and manage the objects.

IOC Container is use to manage dependency between two class in spring framework.

IOC Container is logical memory which is located on top of java JVM.

Types of IOC Container

1. BeanFactory
2. ApplicationContext

BeanFactory:

The BeanFactory is the actual container which instantiates, configures, and manages a number of beans.

These beans typically collaborate with one another, and thus have dependencies between themselves.

A BeanFactory is represented by the interface org.springframework.beans.factory.BeanFactory.

Application Context:

The Application Context is Spring's advanced container. Similar to BeanFactory,

it can load bean definitions, wire beans together, and dispense beans upon request.

The most commonly used ApplicationContext implementations are –

1. FileSystemXmlApplicationContext − This container loads the definitions of the beans from an XML file.
   Here you need to provide the full path of the XML bean configuration file to the constructor.
2. ClassPathXmlApplicationContext − This container loads the definitions of the beans from an XML file.
   Here you do not need to provide the full path of the XML file but you need to set CLASSPATH properly because this container will look like bean configuration XML file in CLASSPATH.
3. WebXmlApplicationContext − This container loads the XML file with definitions of all beans from within a web application.

How to Retrieve Bean from Spring Container?

Both *BeanFactory* and *ApplicationContext* interface provides *getBean()* method to retrieve bean from spring container.

ApplicationContext getBean() Example:

```
ApplicationContext context = new ClassPathXmlApplicationContext("applicationContext.xml");
HelloWorld obj = (HelloWorld) context.getBean("helloWorld");
```

WebApplicationContex:

WebApplicationContext in Spring is a web-aware ApplicationContext
i.e it has Servlet Context information. In a single web application,
there can be multiple WebApplicationContext.
That means each DispatcherServlet is associated with a single WebApplicationContext.
The WebApplicationContext configuration file *-servlet.xml is specific to the DispatcherServlet and
a web application can have more than one DispatcherServlet configured to handle the requests and
each DispatcherServlet would have a separate *-servlet.xml file to configure.

Web Server:

It is a computer program that accepts the request for data and sends the specified documents.
Web server may be a computer where the online content is kept.
Essentially internet server is employed to host sites however there exist different
web servers conjointly like recreation, storage, FTP, email, etc.
Example of Web Servers:
Apache Tomcat

Application server:

It encompasses Web container as well as EJB container.

Application servers organize the run atmosphere for enterprises applications.

Application server may be a reasonably server that mean how to put operating system, hosting the applications and services for users, IT services and organizations.

In this, user interface similarly as protocol and RPC/RMI protocols are used.

Examples of Application Server:

JBoss