

Spring Framework

--Santosh Kumar Mondal

ASSOCIATION

COUPLING

OOP

INHERITENCE

POLYMORPHISM

CONSTRUCTOR

SINGLETON

STATIC

REFLECTION

DI

INJECTION

IOC

AOP

Environment

ECLIPSE IDE

MAVEN

Spring Bean

- A Java Object.
- A Java Object created and managed by Spring Container.

```
<bean name="bean1" class="com.dac.Hello" />
```

Spring Bean Attribute - Basic

- **id**
 - Unique bean identifier.
- **name**
 - Bean identifier, can have multiple aliases separated by comma.
- **class**
 - Fully qualified name of the java class.

Spring Bean Attribute - Continue

- **abstract**
 - instance can't be created.
- **parent**
 - Bean inheritance.
- **primary**
 - **Default bean** to autowire. Used in DI.

Spring Bean Attribute - Continue

- **autowire**
 - Inject dependency. Or collaborate multiple bean.
 - **byName**
 - Autowire by property name.
 - **byType**
 - Autowire by property data type
 - **Constructor**
 - Autowire applies to constructor argument.

Spring Bean Attribute - Continue

- **lazy-init**
 - Default value is false. If true, will create bean on **first** request.
- **init-method**
 - This method will be called after bean instance is created by container.
- **destroy-method**
 - This method will be called when bean instance is removed from the container.

Spring Bean Attribute Continue

- **scope**
 - Application Context Aware
 - **singleton**
 - **prototype**
 - Web Context Aware
 - **request**
 - **session**
 - **global-session**

Spring Bean Property Element

- **property**
 - Inject value into bean property
 - Attributes
 - **name**
 - name of the bean property
 - **Value**
 - Primitive value of the bean property
 - **ref**
 - Reference value of the bean property.

Spring Bean Constructor Element

- **constructor-arg**
 - Inject value into bean during construction.
 - Attributes
 - name
 - value
 - ref
 - type
 - index

Injecting Collections

- **List**
- **Set**
- **Map**
- **Properties**

Dependency Injection

- Injecting bean of **reference** type.
- Injecting bean - autowire byName
- Injecting bean - autowire byType
- Injecting bean - @autowire Annotation

Annotating & Auto-Discovery Bean

- **@Component**
 - A general purpose annotation indicating class is a Spring Component.
- **@Controller**
 - Indicate defined class as Spring MVC Controller.
- **@Repository**
 - Indicate defined class as Spring data repository.
- **@Service**
 - Indicate defined class as Service. Used in Restful Web Service.

SPRING MVC

STEP -1 Create Dynamic Web Project. (Note : Do create web.xml)

STEP -2 Convert to Maven Project.

STEP -3 Add Dependency. CORE/CONTEXT/WEBMVC/JDBC/mysql-connector

STEP -4 Update web.xml, Add Servlet and Servlet Mapping.
(org.springframework.web.servlet.DispatcherServlet)

STEP -5 Create spring configuration xml file. At the location of web.xml.

SPRING MVC

STEP -6 File name of spring configuration file. {SPRING_SERVLET_NAME}-servlet.xml

STEP -7 Add spring-mvc schema at root tag of spring configuration file.

STEP -8 Update Spring Configuration file. Add following tags.

```
<context:component-scan base-package="com.dac.servlet">
```

```
<mvc:annotation-driven>
```

STEP -9 Update Spring Configuration file with view resolver.

```
org.springframework.web.servlet.view.InternalResourceViewResolver
```

SPRING MVC

STEP -9 Create view folder inside the WEB-INF to add jsps

STEP -10 Initialize npm and install bootstrap at Webcontent folder.

STEP -11 Create first Controller using Spring.

STEP -12 `${pageContext.request.contextPath}`. Use the command to include bootstrap css in jsp.

```
<bean id="viewResolver" class="org.springframework.web.servlet.view.InternalResourceViewResolver">
    <property name="prefix" value="/WEB-INF/views"></property>
    <property name="suffix" value=".jsp"></property>
</bean>
```

Aspect Oriented Programming

- AOP helps to modularize Cross Cutting Concern.
- **Cross Cutting Concern** are **common functionality** that affects the multiple point of an application.
 - Security
 - Logging
 - Validation

AOP Terminology

- ASPECT

- The key unit of AOP.
- A java class with cross cutting concern or common functionality.
- Application can have multiple number of aspects

AOP Terminology

- ADVICE
 - An actual action to be taken, before or after method execution.
 - Job of an aspect is Advice.
- Types of Advice
 - Before
 - Functionality takes place before method is invoked.
 - After
 - Functionality takes place after method is invoked
 - Around
 - Functionality takes place before and after method is invoked.

AOP Terminology

- Join Point
 - A point in the execution of an application, where Aspect will be plugged.
 - In simple, **where** to apply the aspect.
- Pointcut
 - A set of one or more Joint Point.

Selecting JoinPoint

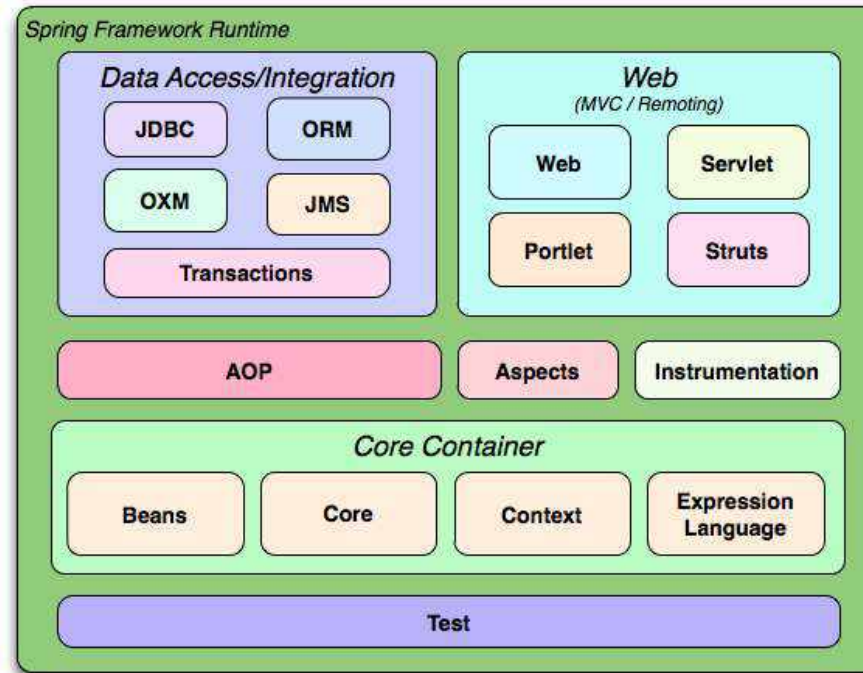
- **execution()**
 - Matches join point that are method execution.
- **within()**
 - Limits matching to join point with certain type.
- **args()**
 - Limits joint point to the execution of method, whose argument are instance of given type

Writing JoinPoint

```
execution( * com.dac.Student.program(..))
```

```
execution( * com.dac.Student.program(String, ..) and args(name, ..))
```

Spring Framework Overview



Thank You