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# Java Beans

Beans are java classes with some special conventions such as —

- ① It should have no argument constructor.
- ② It should be serializable
- ③ It should provide methods to set and get properties known as — setter and getter methods.

According to Java developers, beans are re-usable software components. A bean encapsulates many objects into one object so that we can access this object from multiple places. Although it provides easy maintenance.

## Simple Example :-

Employee.java file :-

```
package mypack; import java.io.*;  
public class Employee implements Serializable  
{  
    private int id;  
    private String name;  
    public Employee () { id=0; name=""; }  
    public void setId (int id) { this.id=id; }  
    public int getId ( ) { return id; }  
    public void setName (String nm) { this.name=nm; }
```

```

public String getName() {
    return name;
}

```

---

To access the class, we should use getter and setter methods.

```

package mypack;

```

```

public class Test {
    public static void main(String args []) {
        Employee obj = new Employee();
        obj.setName("Sanjay Singh");
        System.out.println("Your Name is :"+obj.getName());
    }
}

```

---

### Java Bean Properties :-

A JavaBean property is a named feature that can be accessed by the user of the object. The feature can be of any Java Data type, containing the classes that we define.

A java bean property may be read, write, read-only or write-only.

JavaBean features are accessed through two methods of implemented class:—

① getProperty() → This is called accessor.  
 If our ~~method~~ <sup>property</sup> name is StudentA then it should be named as - getStudentA()

② setProperty() → This is known as mutator. If our property name is address then it should be named as setaddress()

### Advantages of JavaBean :-

Following are the advantages of JavaBean:—

- The JavaBean properties and methods can be exposed to another application.
- It provides an easiness to reuse the software components.

### Disadvantages of JavaBean:—

The following are the disadvantages of JavaBean:—

- The Java Beans are mutable. Hence it cannot take advantages of immutable objects.
- Creating the setter and getter method for each property separately may lead to the boilerplate code.

In computer programming - boilerplate code refers to sections of code that have to be included in many places with little or no alteration. That means the programmer must write a lot of code to do small jobs.

## jsp:useBean action tag :-

This tag is used to instantiate a bean class. If bean object of the Bean class is already created, it does not create the bean depending on the scope. But if object of bean is not created, it instantiates the bean.

### Syntax:-

```
<jsp:useBean id="instanceName" scope="page|request|
session|application"
class="packageName.className" type="packageName.
className" beanName="packageName.className|<%=
expression">>
</jsp:useBean>
```

### Details of attributes of `jsp:useBean` :-

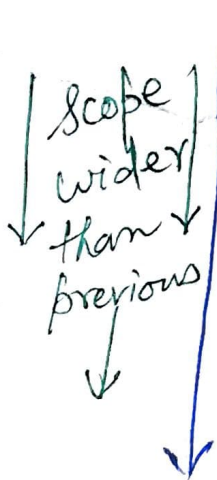
1. id: used to identify bean in the specified scope.
2. scope: It can be upto page, request, session and application. Default is page.

page — use this within the jsp page.

request — use this bean from any jsp page that processes the same request.

session — use this bean from any JSP page in the same session whether processes same request or not.

application — use this beans from any JSP page in the same application.



3. class :- instantiates the specified bean class i.e., creates an object of the bean class. But it has no argument or no constructor and must not be an abstract.

4. type :- provides datatype if the bean already exists in the scope. It is mainly used with class or beanName attribute. If we use it without class or beanName, no bean is instantiated.

5. beanName :- instantiates the bean using the java.beans.Beans.instantiate() method.

Example :- Calculate.java

```
package com.ssc;
public class Calculate {
    public int cube(int x) { return x * x * x; }
}
```

index.jsp

```
<jsp:useBean id="obj" class="com.ssc.Calculate"/>
<% int n = obj.cube(25);
    out.print("Cube of 25 is: " + n);
%>
```

For next class jsp: setProperty & jsp: getProperty example