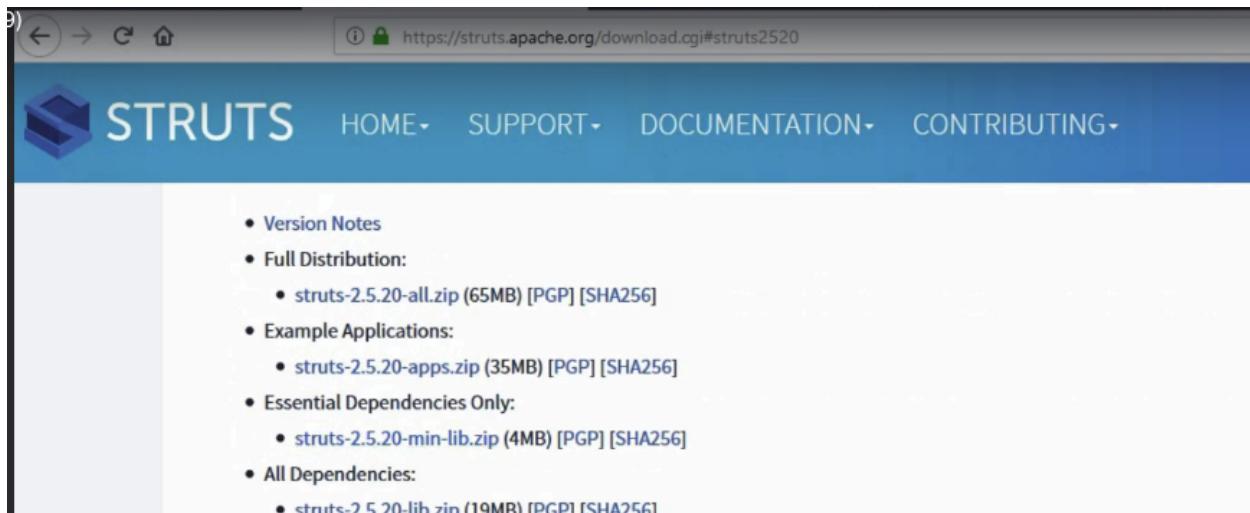


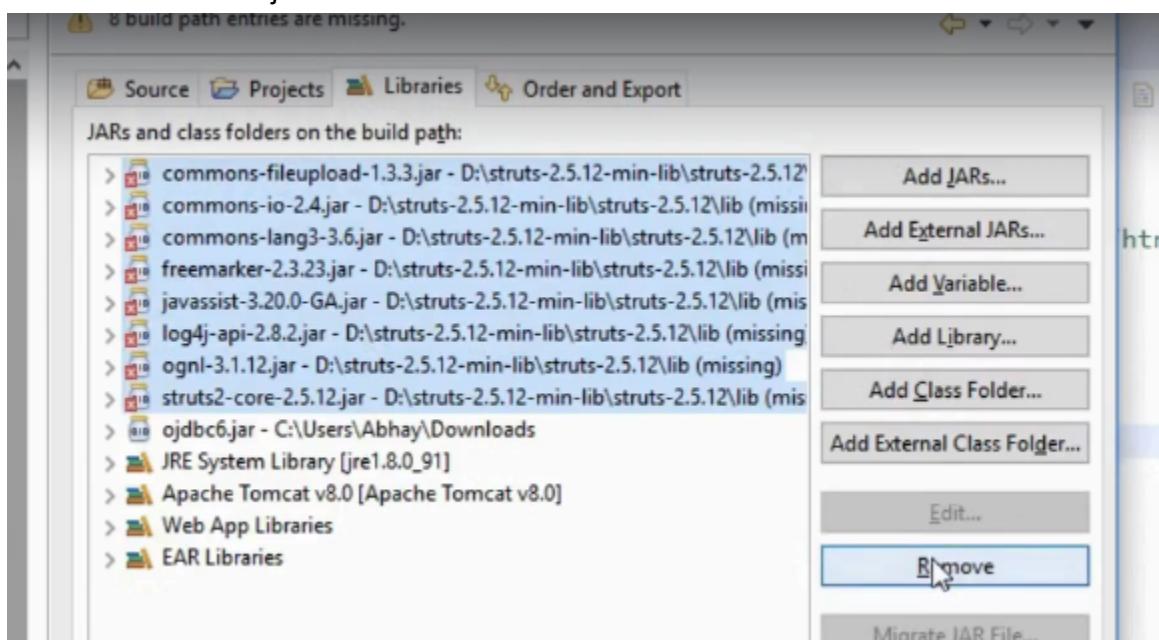
Updated jar location

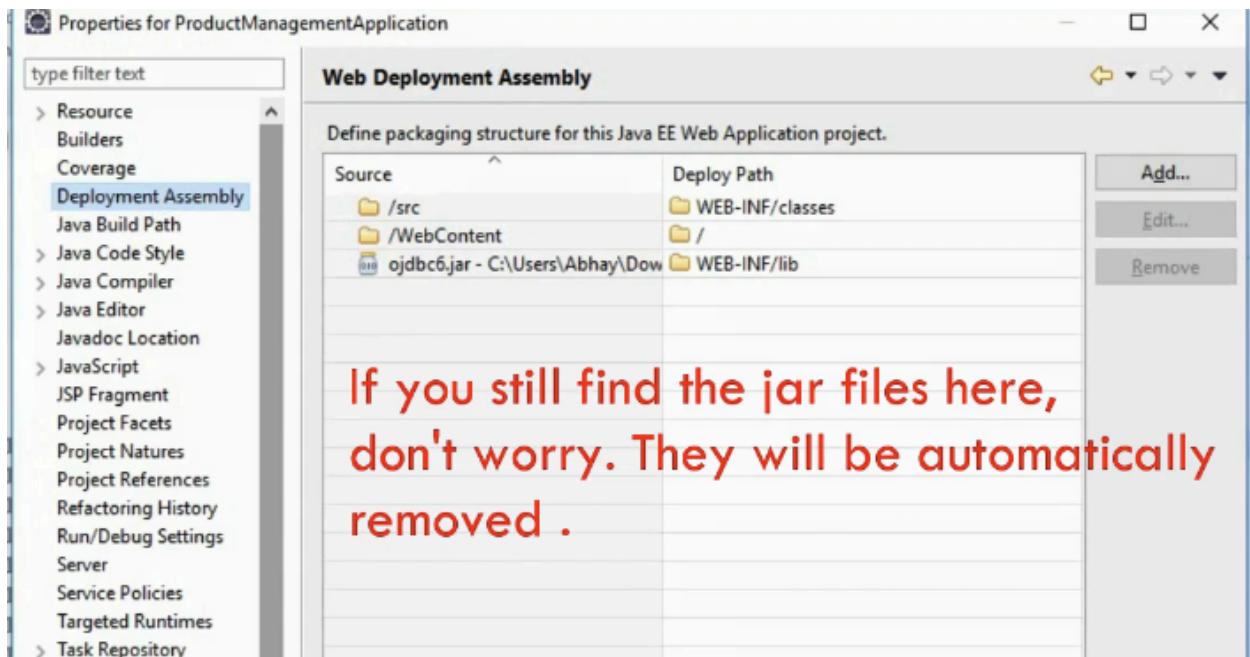


The screenshot shows the official Struts website at <https://struts.apache.org/download.cgi#struts2520>. The page lists several download options for Struts 2.5.20:

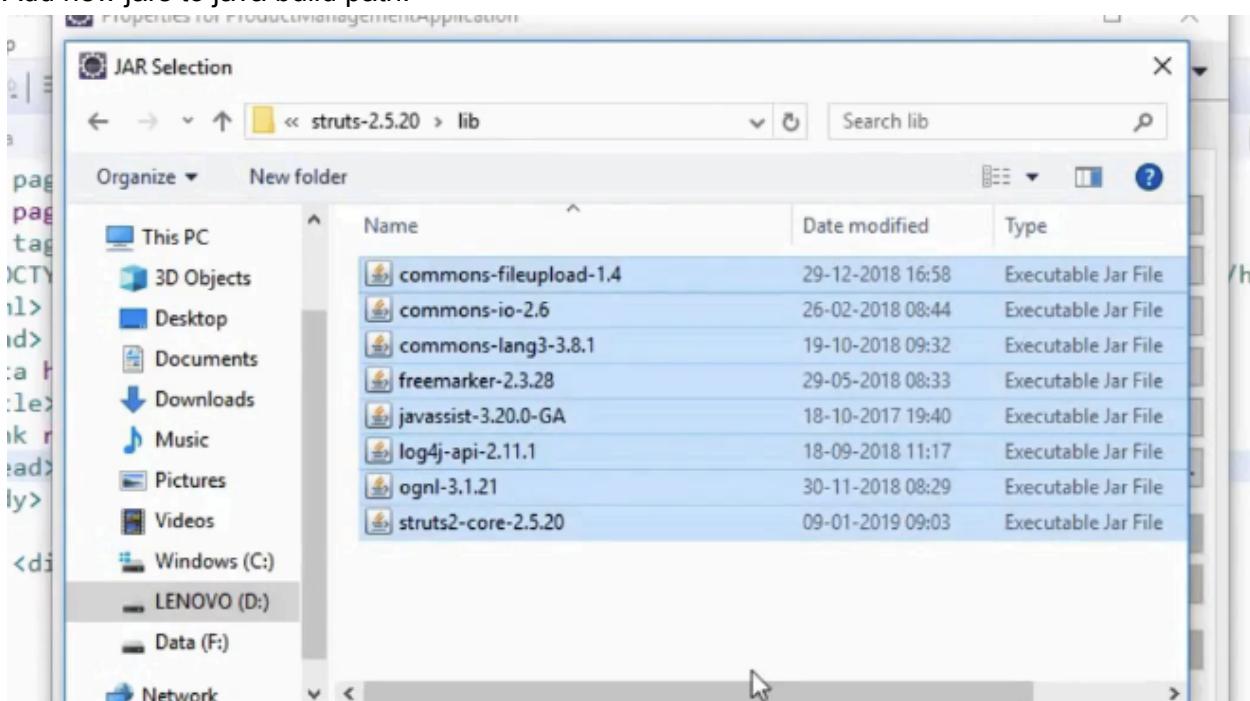
- Version Notes
- Full Distribution:
 - [struts-2.5.20-all.zip \(65MB\)](#) [PGP] [SHA256]
- Example Applications:
 - [struts-2.5.20-apps.zip \(35MB\)](#) [PGP] [SHA256]
- Essential Dependencies Only:
 - [struts-2.5.20-min-lib.zip \(4MB\)](#) [PGP] [SHA256]
- All Dependencies:
 - [struts-2.5.20-lib.zip \(19MB\)](#) [PGP] [SHA256]

Remove old struts 2 jars

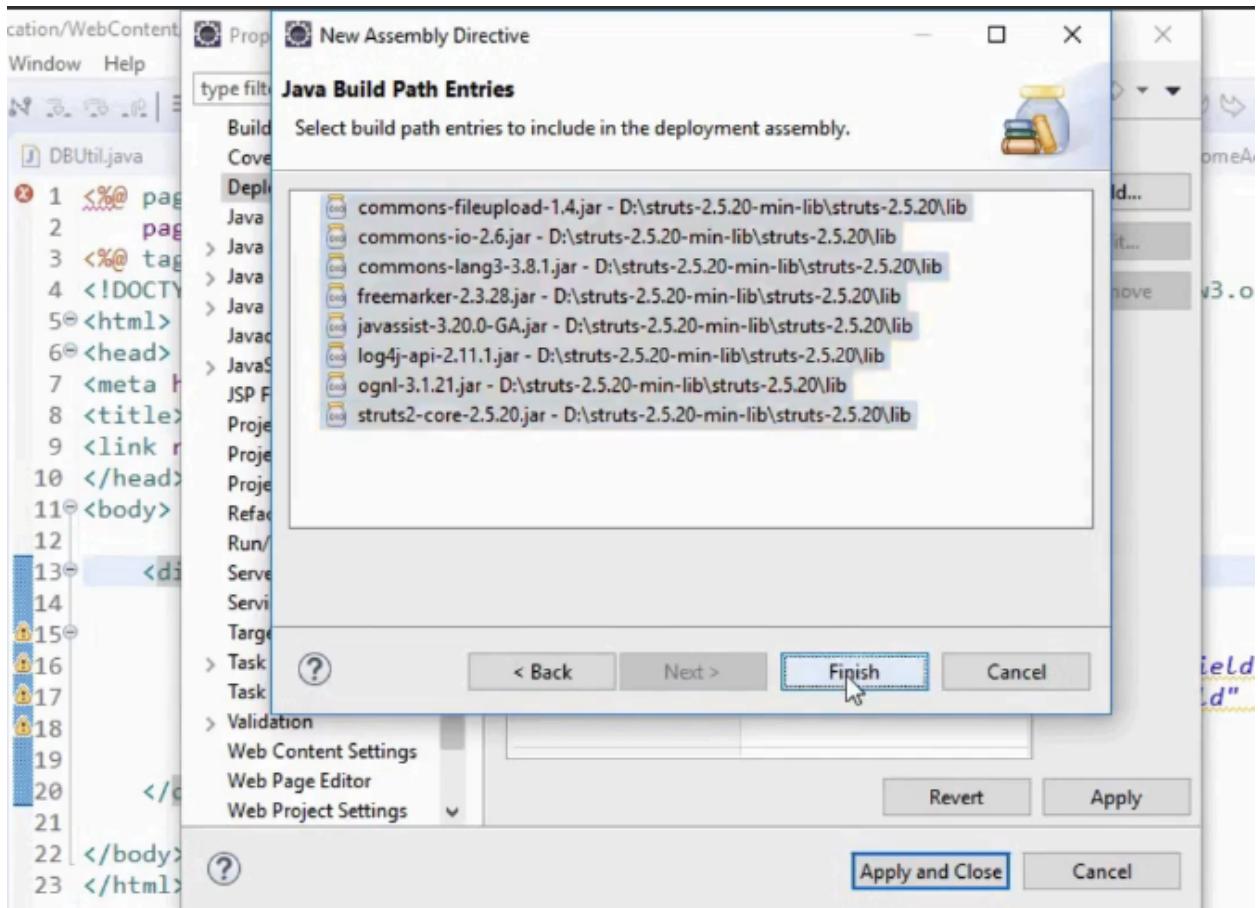




Add new jars to java build path.



Deployment assembly - add - java build path entities - select jar files - finish



Internationalization and Localization

Localization

- Localization is the process of adapting a software application to fit the requirements of a particular region or locale.
- These requirements include language requirements, cultural requirements, date format, numeric format, calendar months, decimal separators etc.
 - Example:-
 - 34,567.89 US, UK
 - 34.567,89 Italy, Germany, Spain

Internationalization

- Internationalization is the process of designing and developing a software application to enable easy localization.
- Internationalization facilitates localization.
- It involves identifying the target locales and then designing and implementing features which support those locales.

- Internationalization – i18n
- Localization – l10n

Localization

- Localization is the process of adapting a software application to fit the requirements of a particular region or locale.

Internationalization

- Internationalization is the process of designing and developing a software application to enable easy localization.

Hardcoded labels in the registration form

```
14
15<s:form action="registerAction">
16    <s:textfield name="firstName" label="First Name" />
17    <s:textfield name="lastName" label="Last Name" />
18    <s:radio name="gender" list="{'Male', 'Female'}" label="Gender" />
19    <s:textfield name="age" label="Age" />
20    <s:textfield name="email" label="Email" />
21    <s:submit value="Register" />
22</s:form>
23
```

Resource Bundle

- It is typically a properties file that contains locale-specific data.
- For every locale, we will have a separate properties file.

Search Order

- ActionClass.properties (RegisterAction.properties)
- package.properties
- global.properties

```
1 global.firstName=First Name
2 global.lastName=Lasst Name
3 global.gender=Gender
4 global.age=Age
5 global.email=E-mail
6 global.register=Refister
```

I have made some spelling errors here.
Apologies for that.

```
1 global.firstName=Prénom
2 global.lastName=Nom de famille
3 global.gender=Le sexe
4 global.age=Âge
5 global.email=E-mail
6 global.register=registre
```

register.jsp global.properties global_fr.properties global_de.properties

```
1 global.firstName=Vorname
2 global.lastName=Nachname
3 global.gender=Geschlecht
4 global.age=Alter
5 global.email=E-mail
6 global.register=registrieren
```

Take the help of google translate for this

Remove labels

```
14
15<s:form action="registerAction">
16    <s:textfield key="global.firstName" name="firstName" />
17    <s:textfield key="global.lastName" name="lastName" />
18    <s:radio key="global.gender" name="gender" list="{ 'Male', 'Female' }" />
19    <s:textfield key="global.age" name="age" />
20    <s:textfield key="global.email" name="email" />
21    <s:submit key="global.register" />
22 </s:form>
23
```

Status.xml require line 7

register.jsp global.properties global_fr.properties global_de.properties struts.xml

```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <!DOCTYPE struts PUBLIC
3     "-//Apache Software Foundation//DTD Struts Configuration 2.5//EN"
4     "http://struts.apache.org/dtds/struts-2.5.dtd">
5
6<struts>
7    <constant name="struts.custom.i18n.resources" value="global" />
8    <package name="register" extends="struts-default">
9        <action name="registerAction" class="RegisterAction">
10            <result name="success">/welcome.jsp</result>
11            <result name="input">/register.jsp</result>
12        </action>
13    </package>
14 </struts>
```

Registration Form

localhost:8088/RegistrationApplication/register.jsp

Registration Form

First Name:

Last Name:

Gender: Male Female

Age:

E-mail:

Register

```
register.jsp | global.properties | global_fr.pro... | global_de.pro... | struts.xml | RegisterAction... | Register
8 <title>Registration Form</title>
9 <s:head/>
10 </head>
11<body>
12 <h2>Registration Form</h2>
13
14
15<s:form action="registerAction">
16     <s:textfield key="global.firstName" name="firstName" />
17     <s:textfield key="global.lastName" name="lastName" />
18     <s:radio key="global.gender" name="gender" list="{'Male', 'Female'}" />
19     <s:textfield key="global.age" name="age" />
20     <s:textfield key="global.email" name="email" />
21     <s:submit key="global.register" />
22 </s:form>
23
24<s:url action="changeLocaleAction" var="urlEn">
25     <s:param name="request_locale">en</s:param>
26 </s:url>
27 <a href="${urlEn}">English</a> | I
28
29
```

The screenshot shows a Java IDE interface with multiple tabs at the top: "register.jsp", "global.properti...", "global_fr.pro...", "global_de.pro...", "struts.xml", and "RegisterAction...". The "struts.xml" tab is active, displaying the following XML code:

```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <!DOCTYPE struts PUBLIC
3     "-//Apache Software Foundation//DTD Struts Configuration 2.5//EN"
4     "http://struts.apache.org/dtds/struts-2.5.dtd">
5
6<struts>
7     <constant name="struts.custom.i18n.resources" value="global" />
8<package name="register" extends="struts-default">
9     <action name="changeLocaleAction" class="ChangeLocaleAction">
10        <result name="input"/>/register.jsp</result>
11    </action>
12    <action name="registerAction" class="RegisterAction">
13        <result name="success"/>/welcome.jsp</result>
14        <result name="input"/>/register.jsp</result>
15    </action>
16</package>
17</struts>
```

The screenshot shows a Java IDE interface with multiple tabs at the top: "register.jsp", "global.properti...", "global_fr.pro...", "global_de.pro...", "struts.xml", and "RegisterAction...". The "register.jsp" tab is active, displaying the following JSP code:

```
1 import com.opensymphony.xwork2.ActionSupport;
2
3 public class ChangeLocaleAction extends ActionSupport{
4
5     public String execute()
6     {
7         return INPUT;
8     }
9 }
10
11
```

The screenshot shows a Java IDE interface with multiple tabs at the top: "register.jsp", "global.properti...", "global_fr.pro...", "global_de.pro...", "struts.xml", and "RegisterAction...". The "register.jsp" tab is active, displaying the following JSP code with Struts tags:

```
22 </s:form>
23
24<s:url action="changeLocaleAction" var="urlEn">
25     <s:param name="request_locale">en</s:param>
26 </s:url> /RegistrationApplication/changeLocaleAction.action?request_locale=en
27 <a href="#">urlEn>English</a>
28
29
```

```
1  <s:submit key="global.register" />
2  </s:form>
3
4@<s:url action="changeLocaleAction" var="urlEn">
5    <s:param name="request_locale">en</s:param>
6  </s:url>
7  <a href="#">English</a>
8  English is equivalent to
9
10@ <a href="/RegistrationApplication/changeLocaleAction.action?request_locale=en">English</a>
11 </body>
12 </html>
```

Markers Properties Servers Data Source Explorer Snippets Console

```
1  <s:submit key="global.register" />
2  </s:form>
3
4@<s:url action="changeLocaleAction" var="urlEn">
5    <s:param name="request_locale">en</s:param>
6  </s:url>
7  <a href="#">English</a>
8
9@<s:url action="changeLocaleAction" var="urlFr">
10   <s:param name="request_locale">fr</s:param>
11 </s:url>
12 <a href="#">French</a>
13
14@<s:url action="changeLocaleAction" var="urlDe">
15   <s:param name="request_locale">de</s:param>
16 </s:url>
17 <a href="#">German</a> | I
18@
```

Registration Form

localhost:8088/RegistrationApplication/register.jsp

First Name:

Last Name:

Gender: Male Female

Age:

E-mail:

[English](#) [French](#) [German](#)

Registration Form

localhost:8088/RegistrationApplication/changeLocaleAction.action?request_locale=fr

Prénom:

Nom de famille:

Le sexe: Male Female

Âge:

E-mail:

[English](#) [French](#) [German](#)

Registration Form

localhost:8088/RegistrationApplication/changeLocaleAction.action?request_locale=de

Vorname:

Nachname:

Geschlecht: Male Female

Alter:

E-mail:

[English](#) [French](#) [German](#)

We have internationalized our application to support multiple languages.

Still error message are in English

Registration Form x +

or messages i localhost:8088/RegistrationApplication/registerAction.action

Registration Form

First name is required

Prénom:

Last name is required

Nom de famille:

Gender is required

Le sexe: Male Female

Age is required

Âge: 

Email is required

E-mail:

[English](#) [French](#) [German](#)

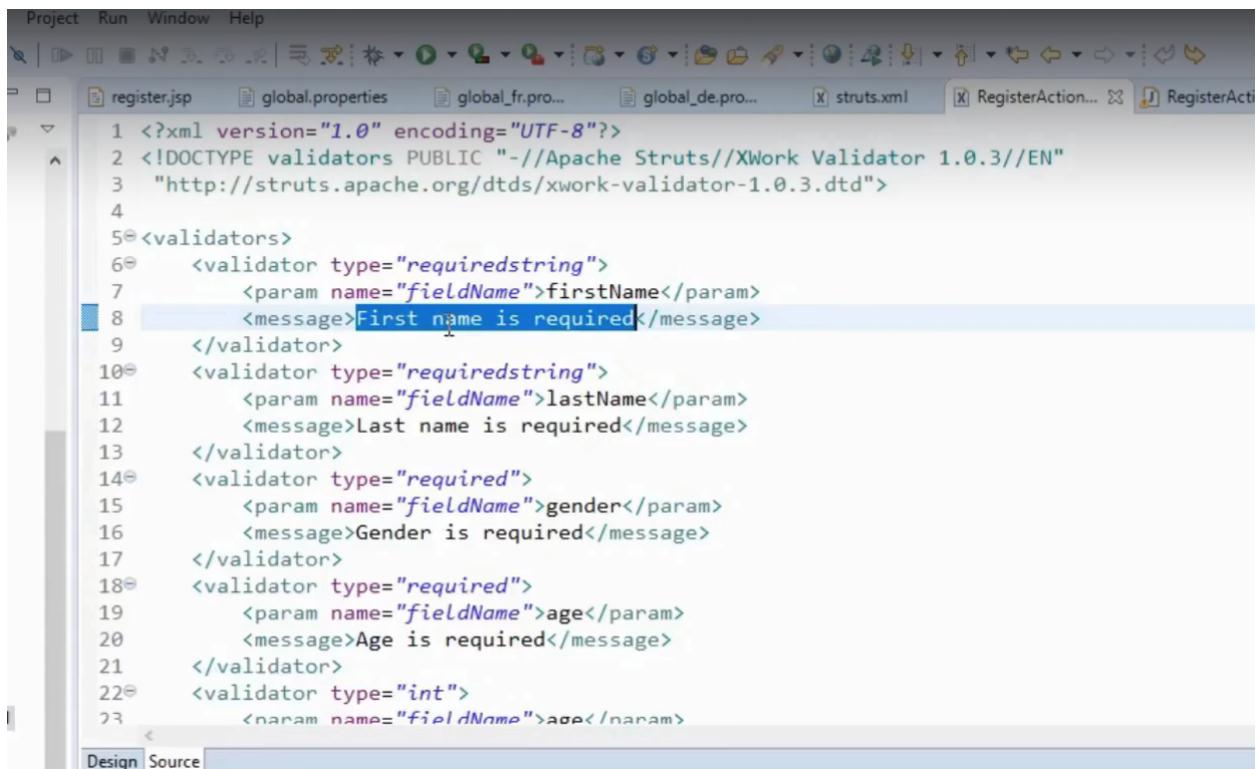
The screenshot shows a Java IDE interface with multiple tabs at the top: register.jsp, global.properties, global_fr.pro..., global_de.pro..., and struts.xml. The global.properties tab is active, displaying the following content:

```
1 global.firstName=Prénom
2 global.lastName=Nom de famille
3 global.gender=Le sexe
4 global.age=Âge
5 global.email=E-mail
6 global.register=registre
7
8 error.firstName.required=Le prénom est requis
9 error.lastName.required=Le nom est requis
10 error.gender.required=Le genre est requis
11 error.age.required=L'âge est requis
12 error.age.range=L'âge devrait être supérieur à 18 ans
13 error.email.required=E-mail est requis
14 error.email.valid=Doit fournir un email valide
```

The screenshot shows a Java IDE interface with multiple tabs at the top: register.jsp, global.properties, global_fr.pro..., global_de.pro..., and struts.xml. The global.properties tab is active, displaying the following content:

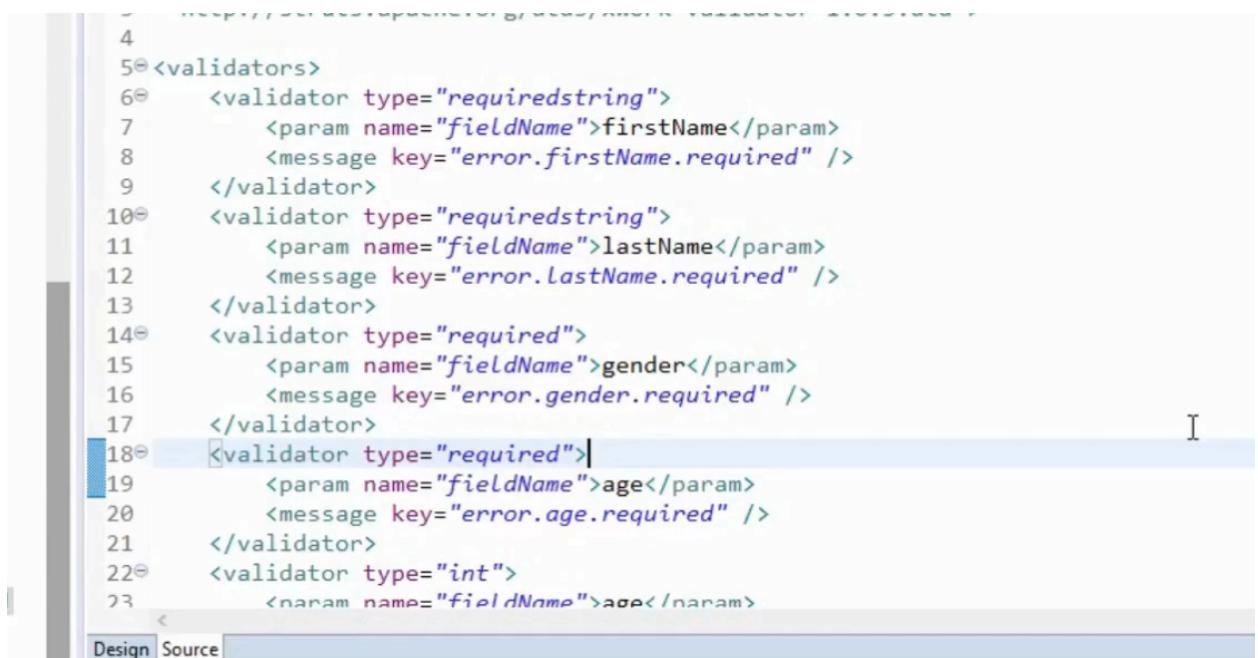
```
1 global.firstName=Vorname
2 global.lastName=Nachname
3 global.gender=Geschlecht
4 global.age=Alter
5 global.email=E-mail
6 global.register=registrieren
7
8 error.firstName.required=Vorname ist erforderlich
9 error.lastName.required=Nachname ist erforderlich
10 error.gender.required=Geschlecht ist erforderlich
11 error.age.required=Alter ist erforderlich
12 error.age.range=Alter sollte über 18 sein
13 error.email.required=E-Mail ist erforderlich
14 error.email.valid=Muss eine gültige E-Mail-Adresse angeben
```

We need to remove below hardcoded values



```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <!DOCTYPE validators PUBLIC "-//Apache Struts//XWork Validator 1.0.3//EN"
3   "http://struts.apache.org/dtds/xwork-validator-1.0.3.dtd">
4
5<validators>
6  <validator type="requiredstring">
7    <param name="fieldName">firstName</param>
8    <message>First name is required</message>
9  </validator>
10 <validator type="requiredstring">
11   <param name="fieldName">lastName</param>
12   <message>Last name is required</message>
13 </validator>
14 <validator type="required">
15   <param name="fieldName">gender</param>
16   <message>Gender is required</message>
17 </validator>
18 <validator type="required">
19   <param name="fieldName">age</param>
20   <message>Age is required</message>
21 </validator>
22 <validator type="int">
23   <param name="fieldName">age</param>
```

Change it to as shown below.



```
4
5<validators>
6  <validator type="requiredstring">
7    <param name="fieldName">firstName</param>
8    <message key="error.firstName.required" />
9  </validator>
10 <validator type="requiredstring">
11   <param name="fieldName">lastName</param>
12   <message key="error.lastName.required" />
13 </validator>
14 <validator type="required">
15   <param name="fieldName">gender</param>
16   <message key="error.gender.required" />
17 </validator>
18 <validator type="required">
19   <param name="fieldName">age</param>
20   <message key="error.age.required" />
21 </validator>
22 <validator type="int">
23   <param name="fieldName">age</param>
```

The screenshot shows a web browser window with the title "Registration Form". The URL in the address bar is "localhost:8088/RegistrationApplic". The page content is a registration form with several validation errors:

- Vorname ist erforderlich**
The label "Vorname:" is followed by an empty input field.
- Nachname ist erforderlich**
The label "Nachname:" is followed by an empty input field.
- Geschlecht ist erforderlich**
The label "Geschlecht:" is followed by two radio buttons: "Male" and "Female".
- Alter ist erforderlich**
The label "Alter:" is followed by an empty input field.
- E-Mail ist erforderlich**
The label "E-mail:" is followed by an empty input field.

At the bottom right of the form is a button labeled "registrieren". Below the form, there are language links: "English", "French", and "German".

We have one more validator which we commented earlier apart from above xml. Just uncomment and try we will see two error messages

The screenshot shows a Java code editor within an IDE. The code is contained in a file named `register.jsp`. The code itself is a Java scriptlet, likely part of a JSP page, which includes validation logic for email, first name, last name, gender, and age.

```
54     public void setEmail(String email) {  
55         this.email = email;  
56     }  
57  
58     /*public void validate()  
59     {  
60         if (firstName.equals("")) {  
61             addFieldError("firstName", "First name is required.");  
62         }  
63  
64         if (lastName.equals("")) {  
65             addFieldError("lastName", "Last name is required.");  
66         }  
67  
68         if (gender == null) {  
69             addFieldError("gender", "Gender is required.");  
70         }  
71  
72         if (age == null) {  
73             addFieldError("age", "Age is required.");  
74         }  
75         else if(age <= 18)  
76     }  
77 }
```

The code editor interface includes a toolbar at the top, a tab bar with multiple files, and a bottom navigation bar with icons for Markers, Properties, Servers, Data Source Explorer, Snippets, and Console.

Registration Form x +

localhost:8088/RegistrationApplication/registerAction.action

Registration Form

Le prénom est requis
First name is required.

Prénom:

Le nom est requis
Last name is required.

Nom de famille:

Le genre est requis
Gender is required.

Le sexe: Male Female

L'âge est requis
Age is required.

Âge:

E-mail est requis
Email is required.

E-mail:

[English](#) [French](#) [German](#)

The screenshot shows a Java code editor within an IDE. The code is part of a class named `RegisterAction`. It includes methods for setting email and validating user input. The validation logic checks for required fields: first name, last name, gender, and age. If any field is missing or invalid, it adds an error message to the `addFieldError` method.

```
54     public void setEmail(String email) {  
55         this.email = email;  
56     }  
57  
58     public void validate()  
59     {  
60         if (firstName.equals("")) {  
61             addFieldError("firstName", getText("error.firstName.required"));  
62         }  
63  
64         if (lastName.equals("")) {  
65             addFieldError("lastName", getText("error.lastName.required"));  
66         }  
67  
68         if (gender == null) {  
69             addFieldError("gender", getText("error.gender.required"));  
70         }  
71  
72         if (age == null) {  
73             addFieldError("age", getText("error.age.required"));  
74         }  
75         else if(age <= 18)  
76         {  
77     }
```

Now we see both errors in the same language.

localhost:8088/RegistrationApplication/registerAction.a

Registration Form

First name is required

First name is required

First Name:

Last name is required

Last name is required

Last Name:

Gender is required

Gender is required

Gender: Male Female

Age is required

Age is required

Age:

E-mail is required

E-mail is required

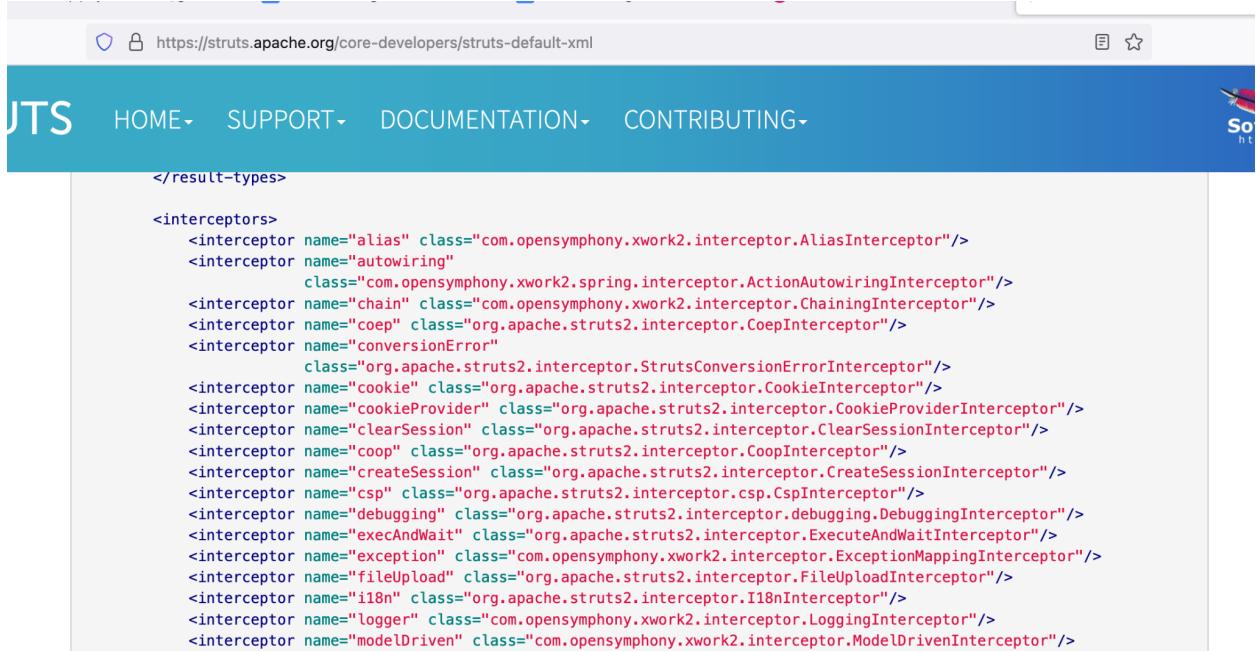
E-mail:

[English](#) [French](#) [German](#)

Interceptor Stack:

- Interceptor stack is just a stack of interceptors or a collection of interceptors.
- It defines the sequence or the order in which we want to execute the interceptors.

struts-default



The screenshot shows a web browser window with the URL <https://struts.apache.org/core-developers/struts-default-xml>. The page title is "struts-default". The content displays the XML configuration for the struts-default interceptor stack, listing various interceptors like alias, autowiring, chain, coop, conversionError, cookie, cookieProvider, clearSession, coop, createSession, csp, debugging, execAndWait, exception, fileUpload, i18n, logger, and modelDriven.

```

</result-types>

<interceptors>
    <interceptor name="alias" class="com.opensymphony.xwork2.interceptor.AliasInterceptor"/>
    <interceptor name="autowiring"
        class="com.opensymphony.xwork2.spring.interceptor.ActionAutowiringInterceptor"/>
    <interceptor name="chain" class="com.opensymphony.xwork2.interceptor.ChainingInterceptor"/>
    <interceptor name="coop" class="org.apache.struts2.interceptor.CoopInterceptor"/>
    <interceptor name="conversionError"
        class="org.apache.struts2.interceptor.StrutsConversionErrorInterceptor"/>
    <interceptor name="cookie" class="org.apache.struts2.interceptor.CookieInterceptor"/>
    <interceptor name="cookieProvider" class="org.apache.struts2.interceptor.CookieProviderInterceptor"/>
    <interceptor name="clearSession" class="org.apache.struts2.interceptor.ClearSessionInterceptor"/>
    <interceptor name="coop" class="org.apache.struts2.interceptor.CoopInterceptor"/>
    <interceptor name="createSession" class="org.apache.struts2.interceptor.CreateSessionInterceptor"/>
    <interceptor name="csp" class="org.apache.struts2.interceptor.csp.CspInterceptor"/>
    <interceptor name="debugging" class="org.apache.struts2.interceptor.debugging.DebuggingInterceptor"/>
    <interceptor name="execAndWait" class="org.apache.struts2.interceptor.ExecuteAndWaitInterceptor"/>
    <interceptor name="exception" class="com.opensymphony.xwork2.interceptor.ExceptionMappingInterceptor"/>
    <interceptor name="fileUpload" class="org.apache.struts2.interceptor.FileUploadInterceptor"/>
    <interceptor name="i18n" class="org.apache.struts2.interceptor.I18nInterceptor"/>
    <interceptor name="logger" class="com.opensymphony.xwork2.interceptor.LoggingInterceptor"/>
    <interceptor name="modelDriven" class="com.opensymphony.xwork2.interceptor.ModelDrivenInterceptor"/>

```

ts-default.xml

https://struts.apache.org/core-developers/struts-default-xml.html

STRUTS HOME SUPPORT DOCUMENTATION CONTRIBUTING

```
<interceptor-stack name="emptyStack">
    <interceptor-ref name="noop"/>
</interceptor-stack>

<!-- Basic stack -->
<interceptor-stack name="basicStack">
    <interceptor-ref name="exception"/>
    <interceptor-ref name="servletConfig"/>
    <interceptor-ref name="prepare"/>
    <interceptor-ref name="checkbox"/>
    <interceptor-ref name="datetime"/>
    <interceptor-ref name="multiselect"/>
    <interceptor-ref name="actionMappingParams"/>
    <interceptor-ref name="params"/>
    <interceptor-ref name="conversionError"/>
</interceptor-stack>
```

Contains references to interceptors declared above

Default intercept stack

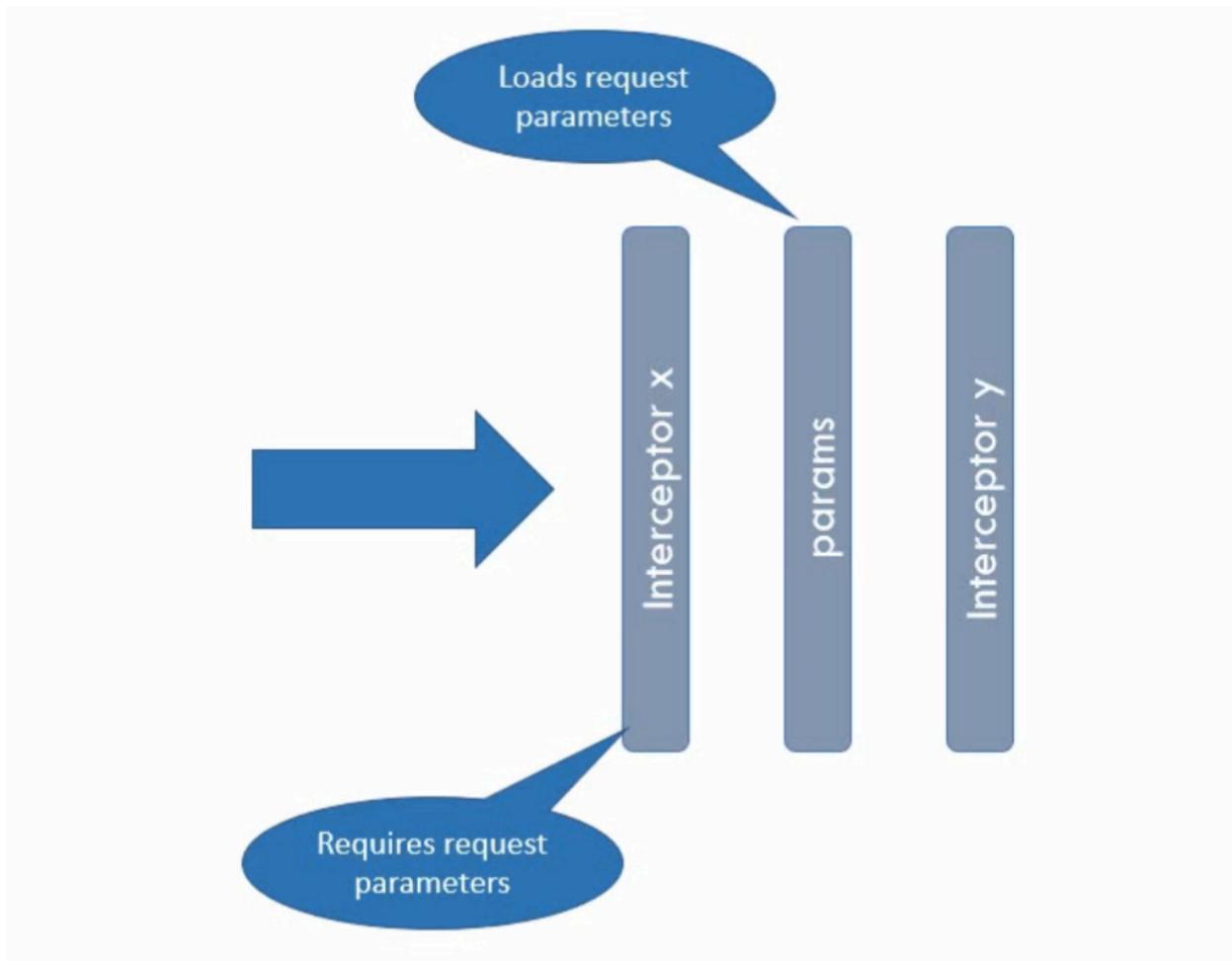
```
-->
<interceptor-stack name="defaultStack">
    <interceptor-ref name="exception"/>
    <interceptor-ref name="alias"/>
    <interceptor-ref name="servletConfig"/>
    <interceptor-ref name="i18n"/>
    <interceptor-ref name="prepare"/>
    <interceptor-ref name="chain"/>
    <interceptor-ref name="scopedModelDriven"/>
    <interceptor-ref name="modelDriven"/>
    <interceptor-ref name="fileUpload"/>
    <interceptor-ref name="checkbox"/>
    <interceptor-ref name="datetime"/>
    <interceptor-ref name="multiselect"/>
</interceptor-stack>

</interceptors>

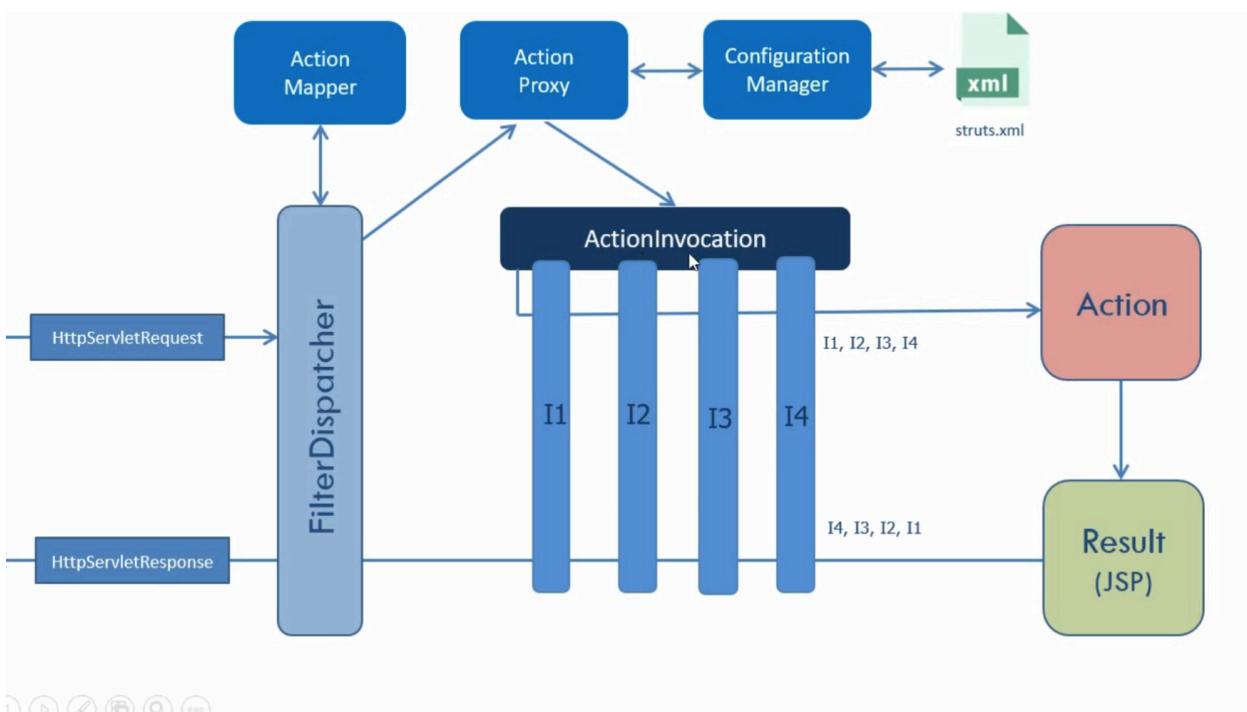
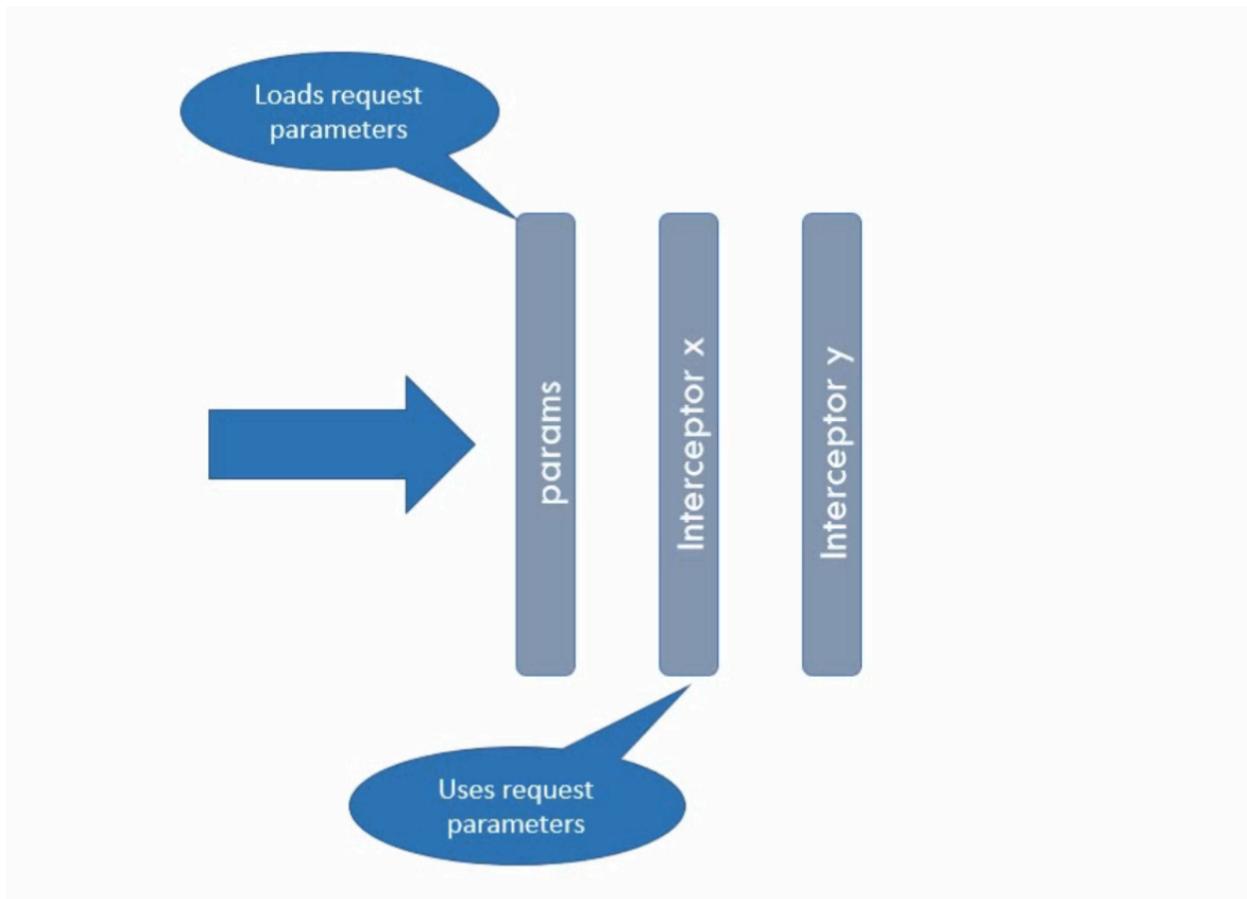
<default-interceptor-ref name="defaultStack"/>

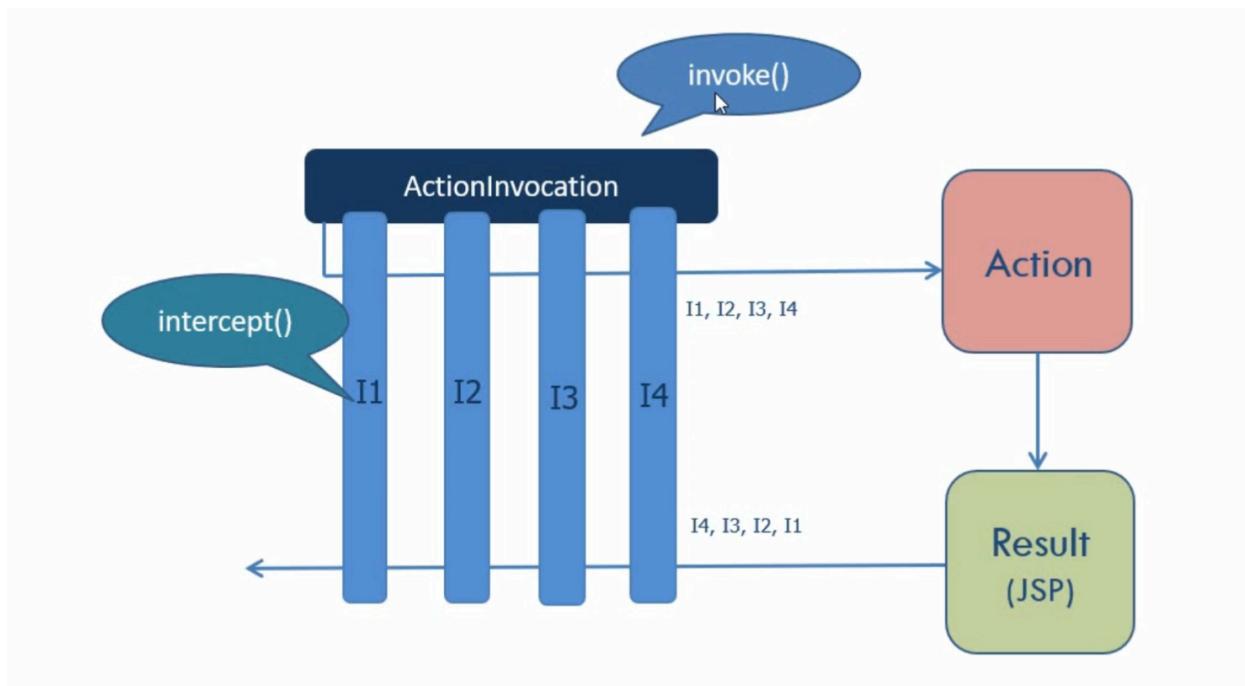
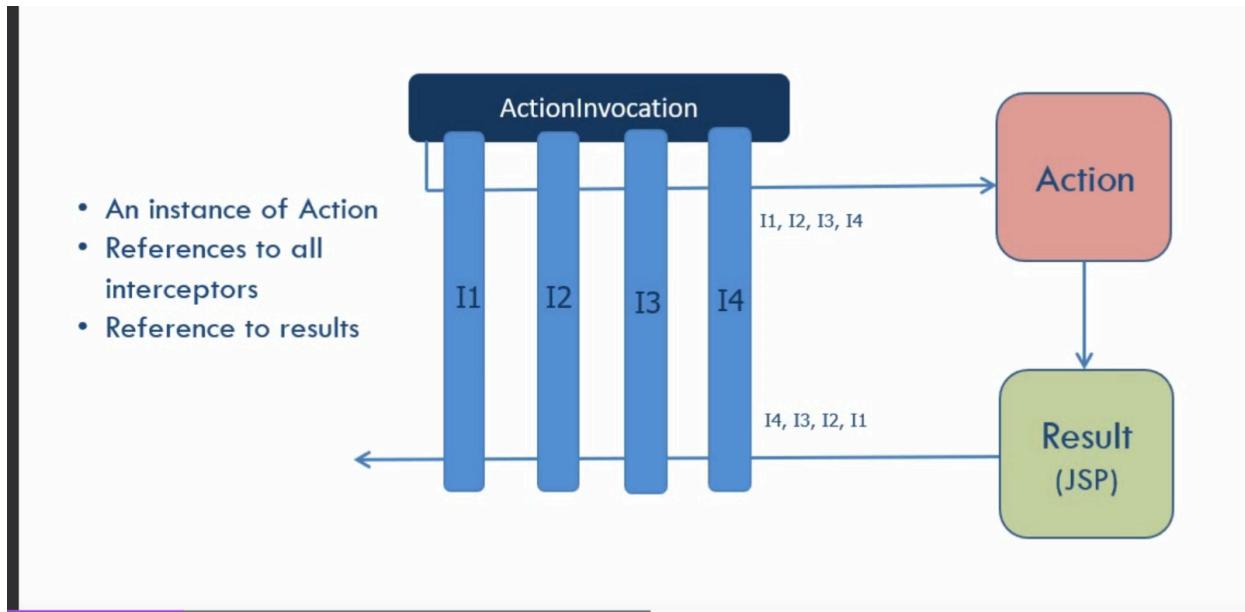
<default-class-ref class="com.opensymphony.xwork2.ActionSupport" />

<global-allowed-methods>execute,input,back,cancel,browse,save,delete</global-allowed-methods>
```



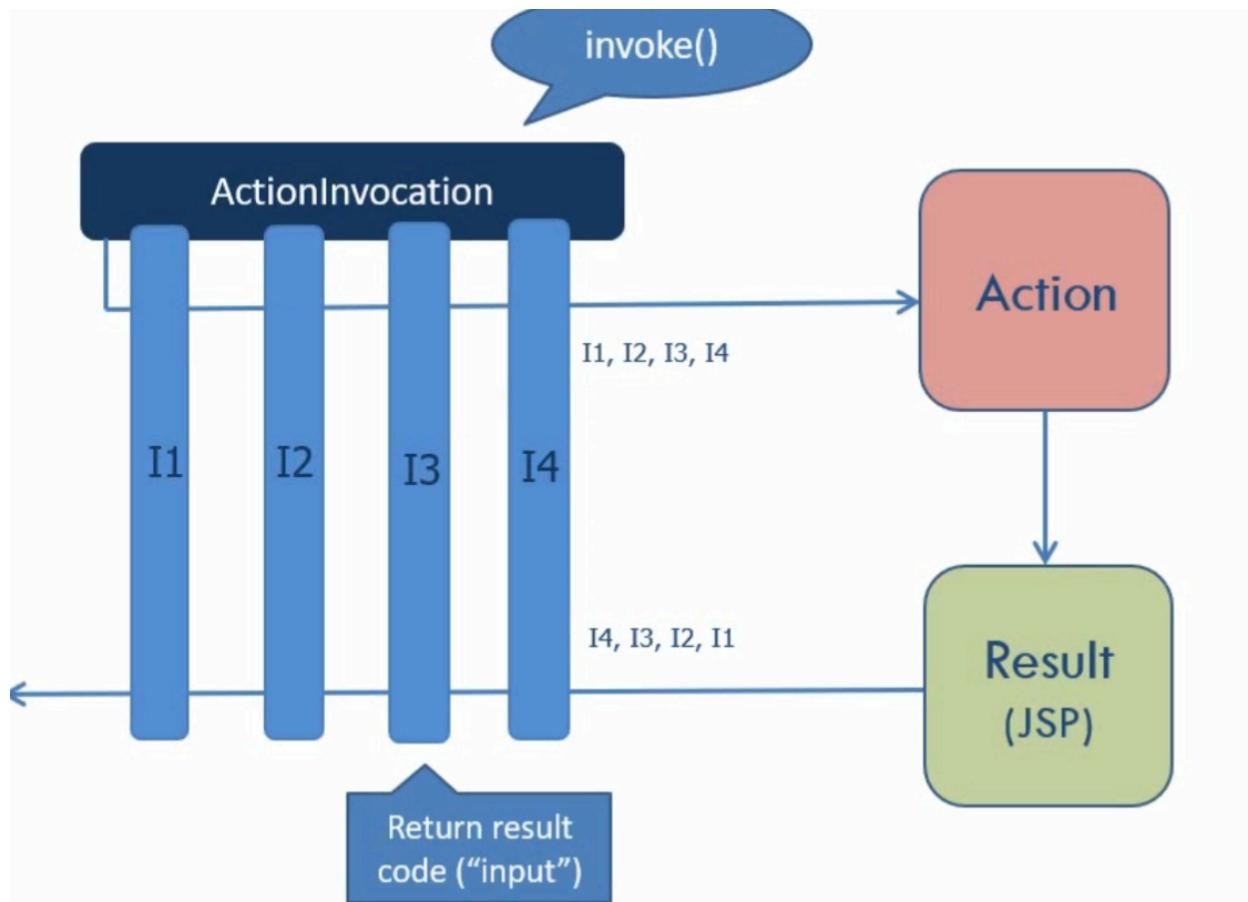
In this case our application fail because inceptor x require params which will execute after interceptor x. Ideal case provided below.





Intercept method has invoke statement and when invoke statement executed then again it will call next interceptor and go on (recursive programming)

Each interceptor returns the result code.



And also after all executed - every interceptor has chance to execute post processor in reverse order except (I4).

Interceptor code looks like below

- Pre-processing
- Pass control to the next interceptor and finally the action
- Post-processing

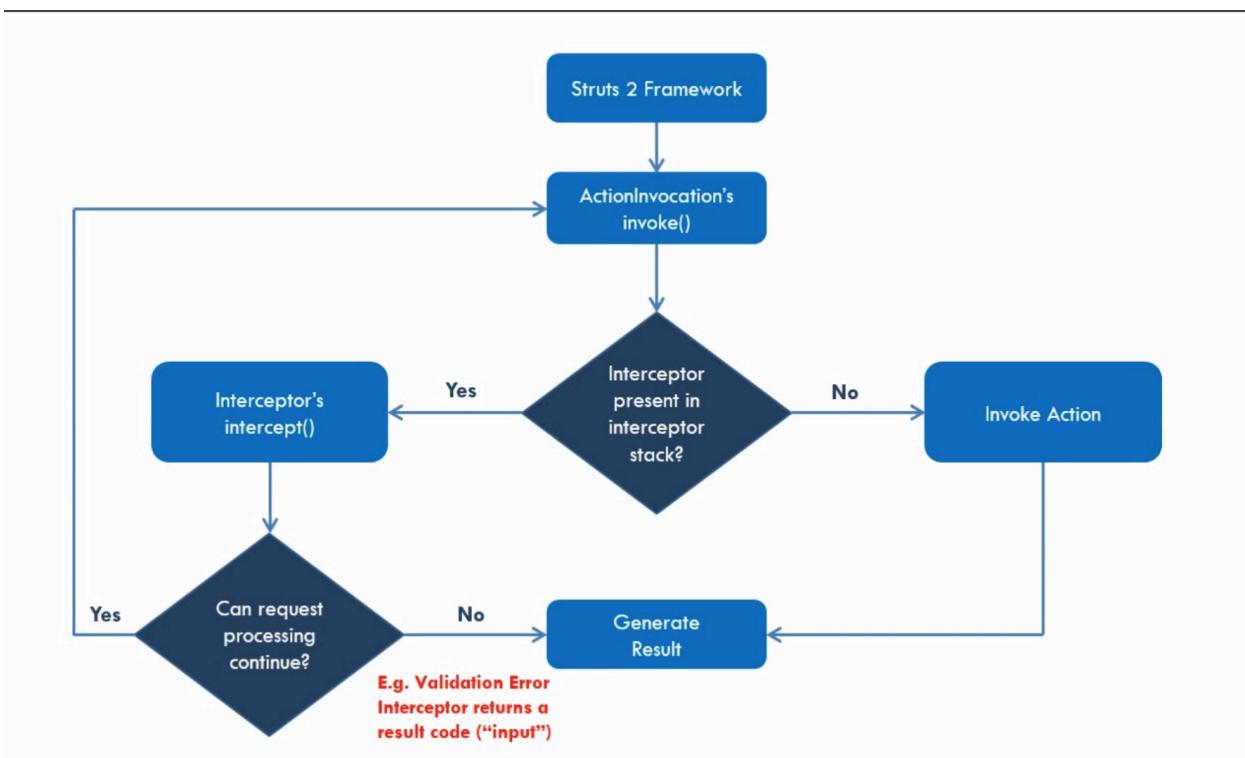
```
intercept()
{
    pre-processing
    invoke(); // pass control
    post-processing
}
```

Out custom interceptor

```

workspaceStruts2 - RegistrationApplication/src/interceptors/TestInterceptor.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Project Explorer Navig... struts.xml *TestInterceptor.java
2
3 import com.opensymphony.xwork2.ActionInvocation;
4 import com.opensymphony.xwork2.interceptor.Interceptor;
5
6 public class TestInterceptor implements Interceptor{
7
8     @Override
9     public void destroy() {
10         // TODO Auto-generated method stub
11     }
12
13     @Override
14     public void init() { I
15         // TODO Auto-generated method stub
16     }
17
18     @Override
19     public String intercept(ActionInvocation arg0) throws Exception {
20         // TODO Auto-generated method stub
21         return null;
22     }
23
24
25

```



How interceptor works. Each time it will check does it has next interceptor if yes that interceptor will execute in same fashion.

The screenshot shows a Java code editor with the file `TestInterceptor.java` open. The code defines a class with methods `destroy()`, `init()`, and `intercept()`. The `intercept()` method prints "pre-processing" before calling the action and "post-processing" after it.

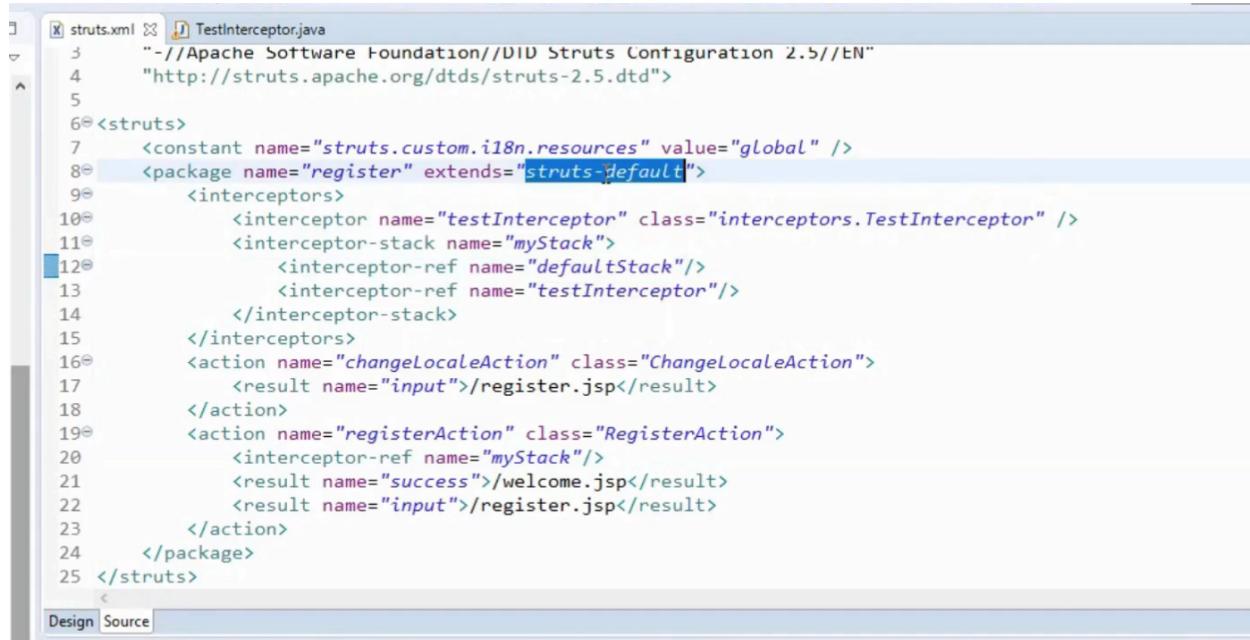
```
7
8    @Override
9     public void destroy() {
10        // TODO Auto-generated method stub
11        System.out.println("destroy() called");
12    }
13
14    @Override
15     public void init() {
16        // TODO Auto-generated method stub
17        System.out.println("init() called");
18    }
19
20    @Override
21     public String intercept(ActionInvocation ai) throws Exception {
22        // TODO Auto-generated method stub
23        System.out.println("pre-processing");
24        String result = ai.invoke();
25        System.out.println("post-processing");
26        return result;
27    }
28
29 }
30 }
```

Custom interceptor syntax in the struts.xml

The screenshot shows an XML configuration file `struts.xml`. It defines a package `register` extending `struts-default`. Inside, it specifies interceptors for actions `changeLocaleAction` and `registerAction`.

```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <!DOCTYPE struts PUBLIC
3   "-//Apache Software Foundation//DTD Struts Configuration 2.5//EN"
4   "http://struts.apache.org/dtds/struts-2.5.dtd">
5
6<struts>
7   <constant name="struts.custom.i18n.resources" value="global" />
8   <package name="register" extends="struts-default">
9     <interceptors>
10       <!-- Interceptor definition -->
11       <!-- Interceptor definition -->
12       <!-- Action definition -->
13       <!-- Action definition -->
14     </interceptors>
15   </package>
16 </struts>
```

For registrationAction we are giving our custom stack

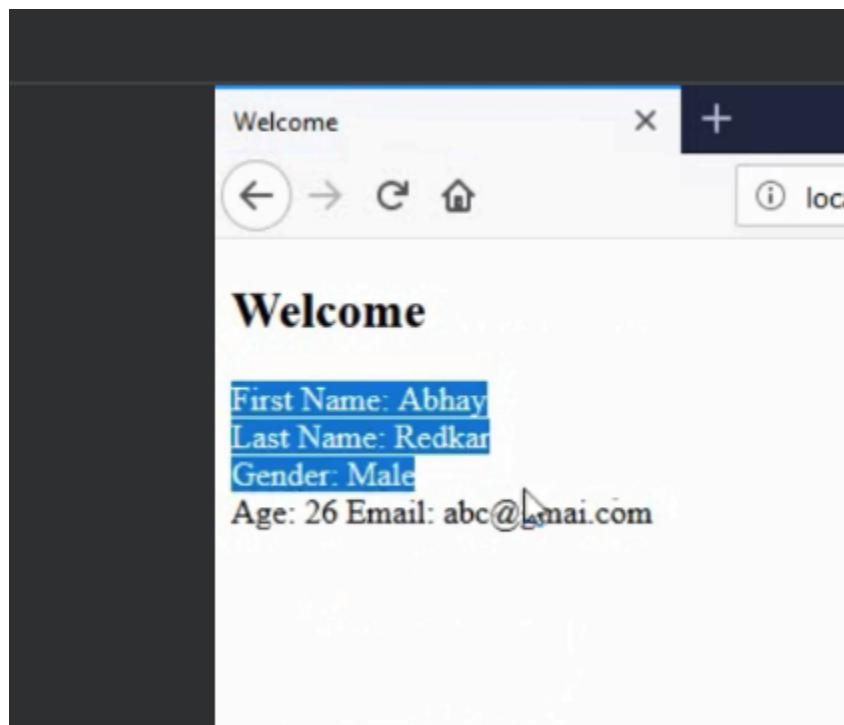


The screenshot shows an IDE interface with two tabs: 'struts.xml' and 'TestInterceptor.java'. The 'struts.xml' tab displays the following XML configuration:

```
<?xml version="1.0" encoding="UTF-8"?>
<struts>
    <constant name="struts.custom.i18n.resources" value="global" />
    <package name="register" extends="struts-default">
        <interceptors>
            <interceptor name="testInterceptor" class="interceptors.TestInterceptor" />
            <interceptor-stack name="myStack">
                <interceptor-ref name="defaultStack"/>
                <interceptor-ref name="testInterceptor"/>
            </interceptor-stack>
        </interceptors>
        <action name="changeLocaleAction" class="ChangeLocaleAction">
            <result name="input"/>/register.jsp</result>
        </action>
        <action name="registerAction" class="RegisterAction">
            <interceptor-ref name="myStack"/>
            <result name="success"/>/welcome.jsp</result>
            <result name="input"/>/register.jsp</result>
        </action>
    </package>
</struts>
```

The 'TestInterceptor.java' tab contains the following Java code:

```
public class TestInterceptor implements Interceptor {
    public void intercept(ActionInvocation invocation) throws Exception {
        System.out.println("Inside TestInterceptor");
        invocation.invoke();
    }
}
```



Try few more time s

localhost:8088/RegistrationApp X +

← → ⌂ ⌂ localhost:8088

Registration Form

First Name: Abhay

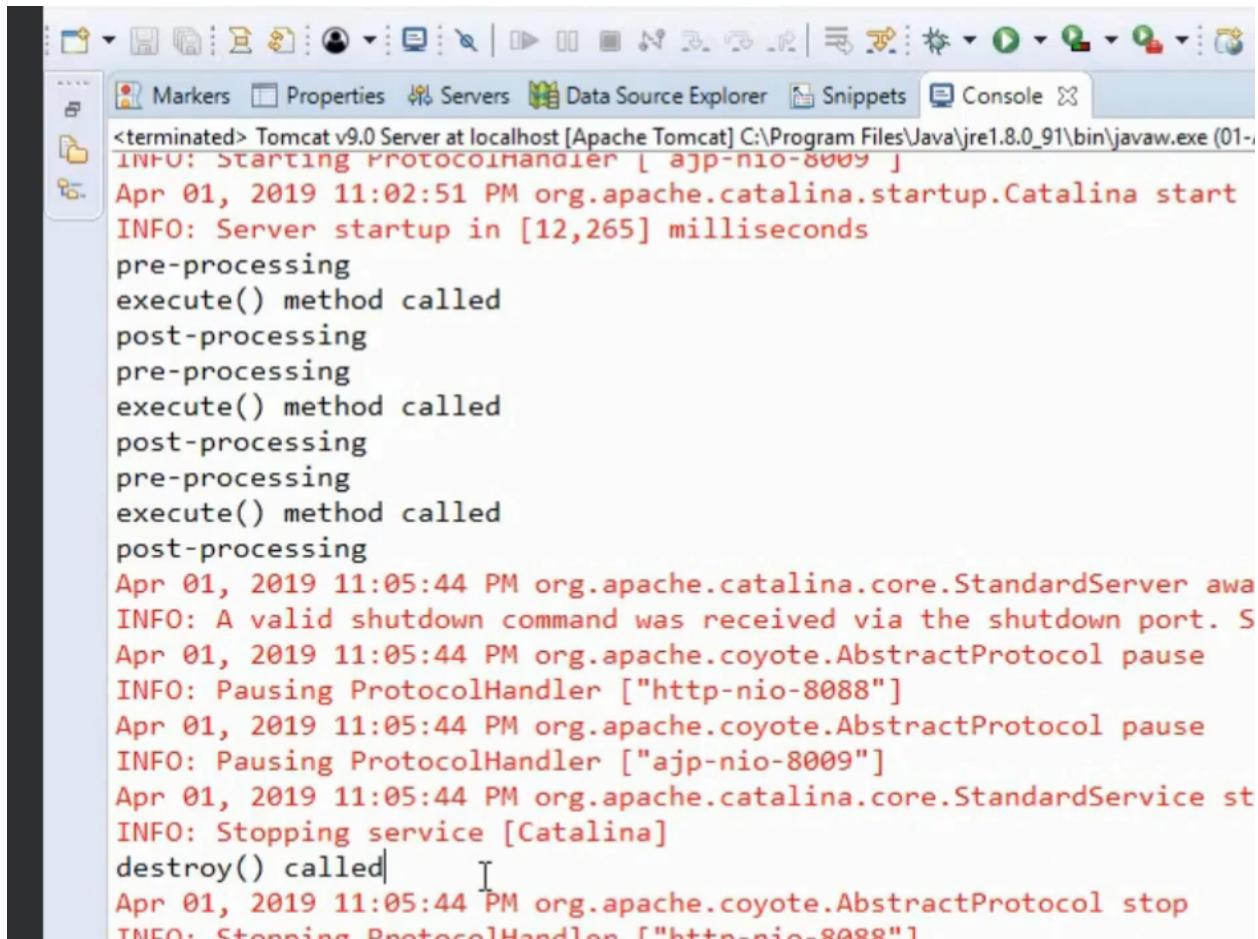
Last Name: Redkar

Gender: Male Female

Age: 26

E-mail: abc@gmai.com

[English](#) [French](#) [German](#)



The screenshot shows the Eclipse IDE interface with the 'Console' tab selected in the top bar. The console window displays the log output from a Tomcat v9.0 Server running at localhost. The log entries are in red text, indicating informational messages. The log shows the server starting up, processing multiple requests (each with a pre-processing, execute(), and post-processing step), pausing protocols, and finally stopping the service.

```
<terminated> Tomcat v9.0 Server at localhost [Apache Tomcat] C:\Program Files\Java\jre1.8.0_91\bin\javaw.exe (01-INFO: Starting ProtocolHandler [ajp-nio-8009])
Apr 01, 2019 11:02:51 PM org.apache.catalina.startup.Catalina start
INFO: Server startup in [12,265] milliseconds
pre-processing
execute() method called
post-processing
pre-processing
execute() method called
post-processing
pre-processing
execute() method called
post-processing
Apr 01, 2019 11:05:44 PM org.apache.catalina.core.StandardServer awa
INFO: A valid shutdown command was received via the shutdown port. S
Apr 01, 2019 11:05:44 PM org.apache.coyote.AbstractProtocol pause
INFO: Pausing ProtocolHandler ["http-nio-8088"]
Apr 01, 2019 11:05:44 PM org.apache.coyote.AbstractProtocol pause
INFO: Pausing ProtocolHandler ["ajp-nio-8009"]
Apr 01, 2019 11:05:44 PM org.apache.catalina.core.StandardService st
INFO: Stopping service [Catalina]
destroy() called
[
Apr 01, 2019 11:05:44 PM org.apache.coyote.AbstractProtocol stop
INFO: Stopping ProtocolHandler ["http-nio-8088"]
```

Stop the server to see the destroy method.

Functional use of interceptor

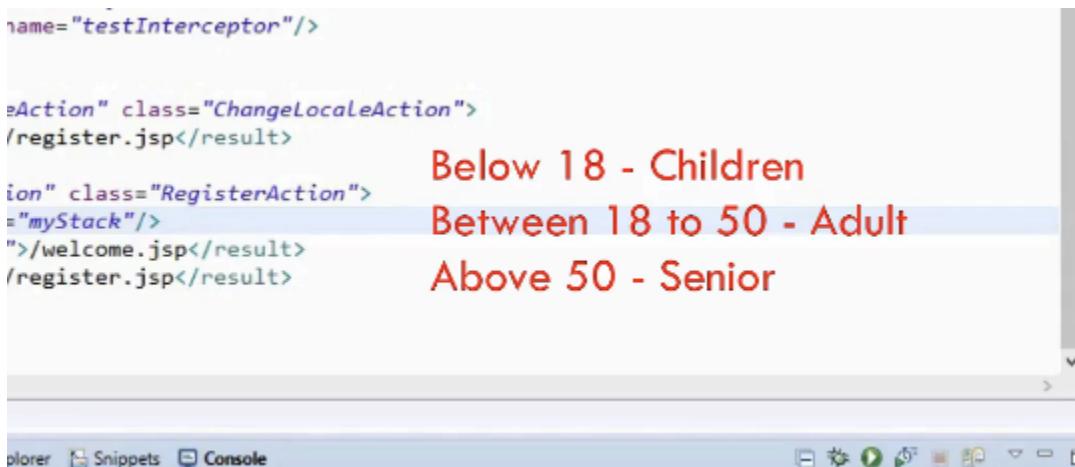
```
name="testInterceptor"/>
```

```
eAction" class="ChangeLocaleAction">
/register.jsp</result>
ion" class="RegisterAction"
="myStack"/>
"/welcome.jsp</result>
/register.jsp</result>
```

Below 18 - Children

Between 18 to 50 - Adult

Above 50 - Senior



The screenshot shows a JSP file with an interceptor configuration. The code defines an interceptor named 'testInterceptor' and applies it to the 'register.jsp' result. The JSP page contains three text blocks: 'Below 18 - Children', 'Between 18 to 50 - Adult', and 'Above 50 - Senior'. The 'Between 18 to 50 - Adult' block is highlighted in red, indicating it is the current selection or the result of the last action.

```
name="testInterceptor"/>

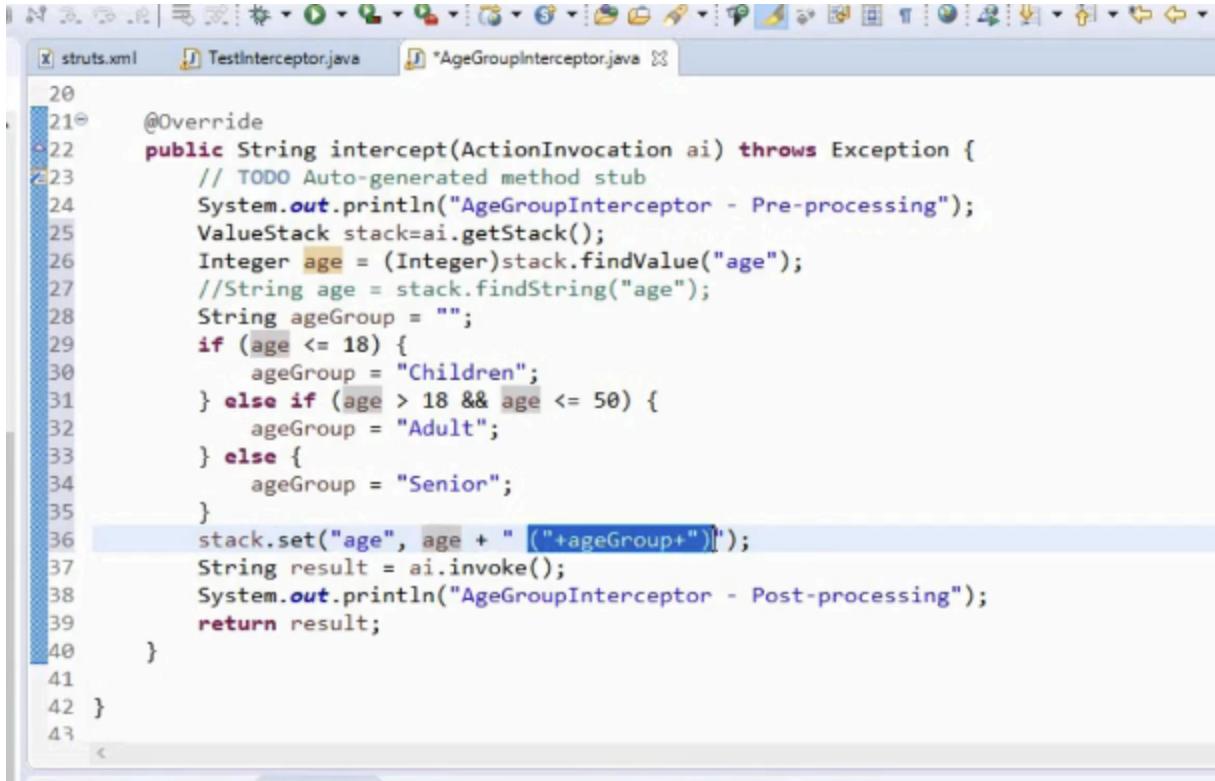
eAction" class="ChangeLocaleAction">
/register.jsp</result>
ion" class="RegisterAction"
="myStack"/>
"/welcome.jsp</result>
/register.jsp</result>
```

```
struts.xml TestInterceptor.java AgeGroupInterceptor.java
3 import com.opensymphony.xwork2.ActionInvocation;
4
5 public class AgeGroupInterceptor implements Interceptor{
6
7     @Override
8     public void destroy() {
9         // TODO Auto-generated method stub
10    }
11
12    @Override
13    public void init() {
14        // TODO Auto-generated method stub
15    }
16
17    @Override
18    public String intercept(ActionInvocation ai) throws Exception {
19        // TODO Auto-generated method stub
20    }
21}
22
23
24
25
26
27
28
```

```
struts.xml TestInterceptor.java AgeGroupInterceptor.java
8
9     @Override
10    public void destroy() {
11        // TODO Auto-generated method stub
12    }
13
14    @Override
15    public void init() {
16        // TODO Auto-generated method stub
17    }
18
19    @Override
20    public String intercept(ActionInvocation ai) throws Exception {
21        // TODO Auto-generated method stub
22        System.out.println("AgeGroupInterceptor - Pre-processing");
23        String result = ai.invoke();
24        System.out.println("AgeGroupInterceptor - Post-processing");
25        return result;
26    }
27
28
29
30 }
```

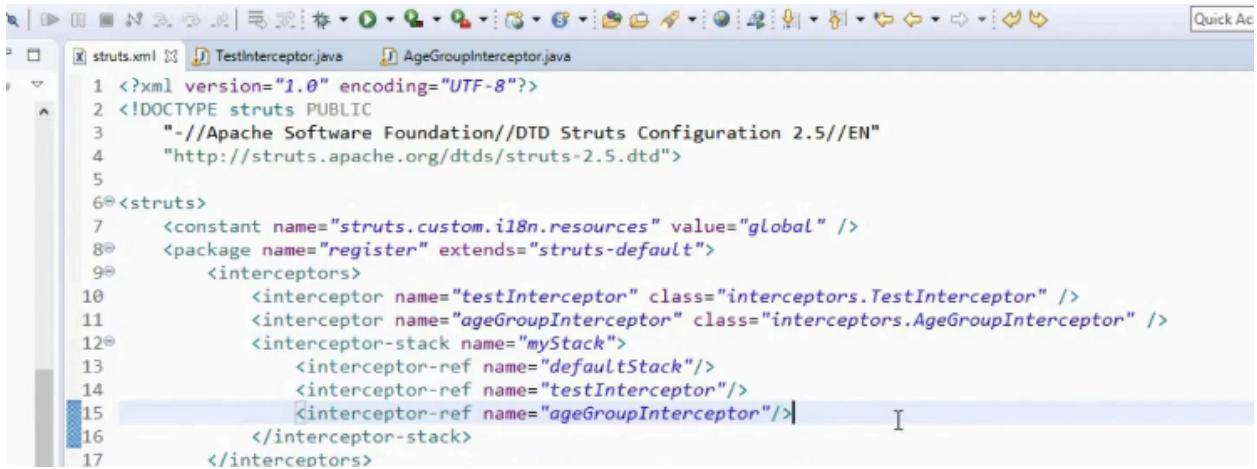
welcome.jsp
Age: 26(Adult)

How to get value from value stack and how to modify value given below



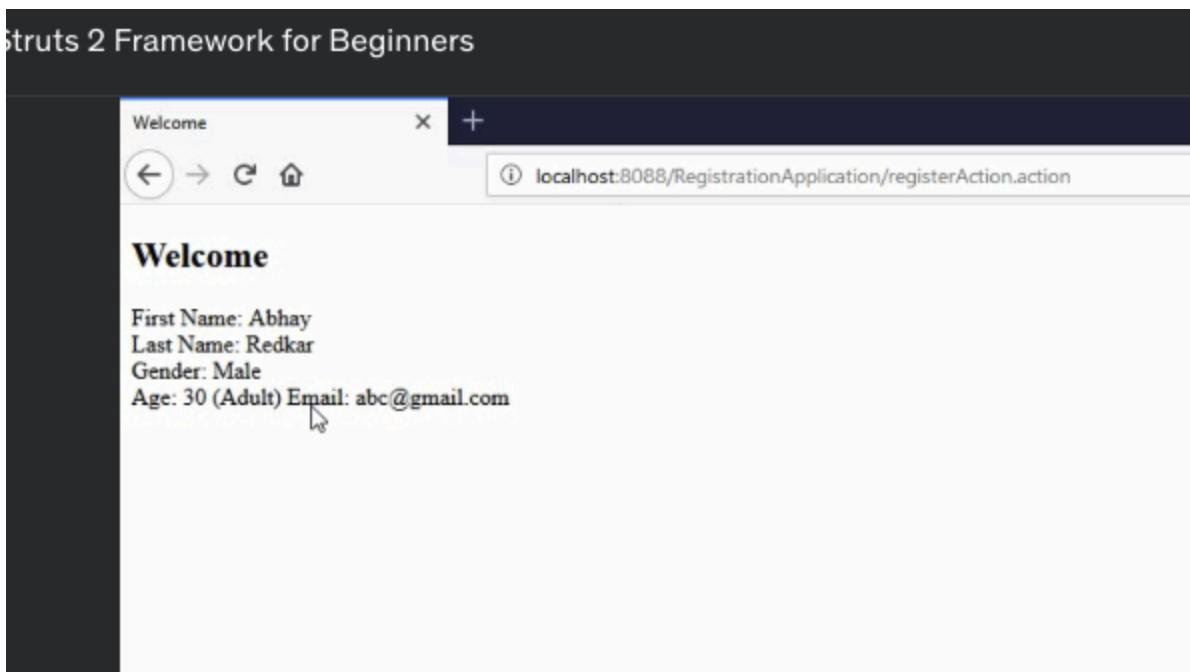
```
20
21@Override
22 public String intercept(ActionInvocation ai) throws Exception {
23     // TODO Auto-generated method stub
24     System.out.println("AgeGroupInterceptor - Pre-processing");
25     ValueStack stack=ai.getStack();
26     Integer age = (Integer)stack.findValue("age");
27     //String age = stack.findString("age");
28     String ageGroup = "";
29     if (age <= 18) {
30         ageGroup = "Children";
31     } else if (age > 18 && age <= 50) {
32         ageGroup = "Adult";
33     } else {
34         ageGroup = "Senior";
35     }
36     stack.set("age", age + " ("+ageGroup+ ")");
37     String result = ai.invoke();
38     System.out.println("AgeGroupInterceptor - Post-processing");
39     return result;
40 }
41
42 }
43
```

Struts.xml with AgeGroupInterceptor (line 10 and line 15)



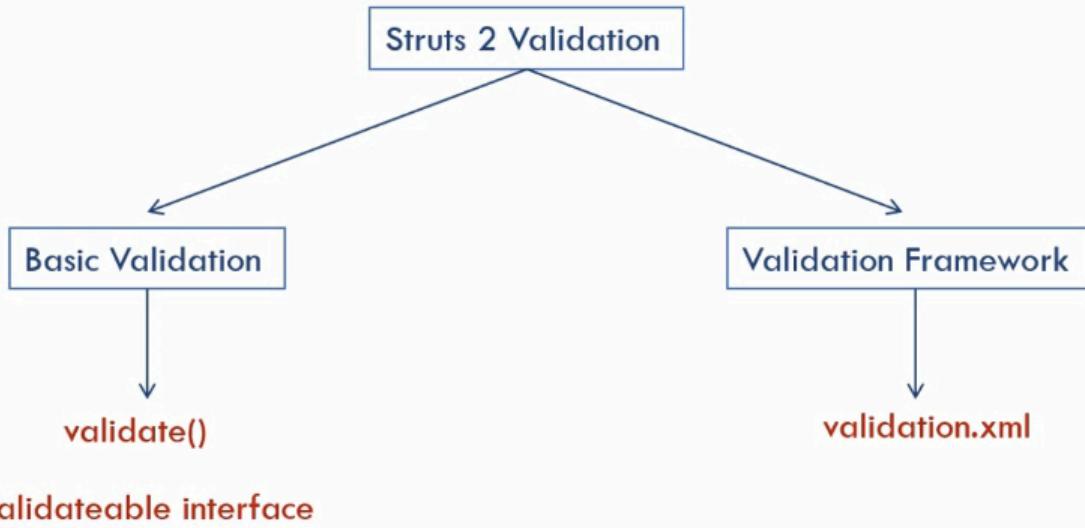
```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <!DOCTYPE struts PUBLIC
3     "-//Apache Software Foundation//DTD Struts Configuration 2.5//EN"
4     "http://struts.apache.org/dtds/struts-2.5.dtd">
5
6<struts>
7     <constant name="struts.custom.i18n.resources" value="global" />
8     <package name="register" extends="struts-default">
9         <interceptors>
10            <interceptor name="testInterceptor" class="interceptors.TestInterceptor" />
11            <interceptor name="ageGroupInterceptor" class="interceptors.AgeGroupInterceptor" />
12            <interceptor-stack name="myStack">
13                <interceptor-ref name="defaultStack"/>
14                <interceptor-ref name="testInterceptor"/>
15                <interceptor-ref name="ageGroupInterceptor"/>
16            </interceptor-stack>
17        </interceptors>
```

Struts 2 Framework for Beginners



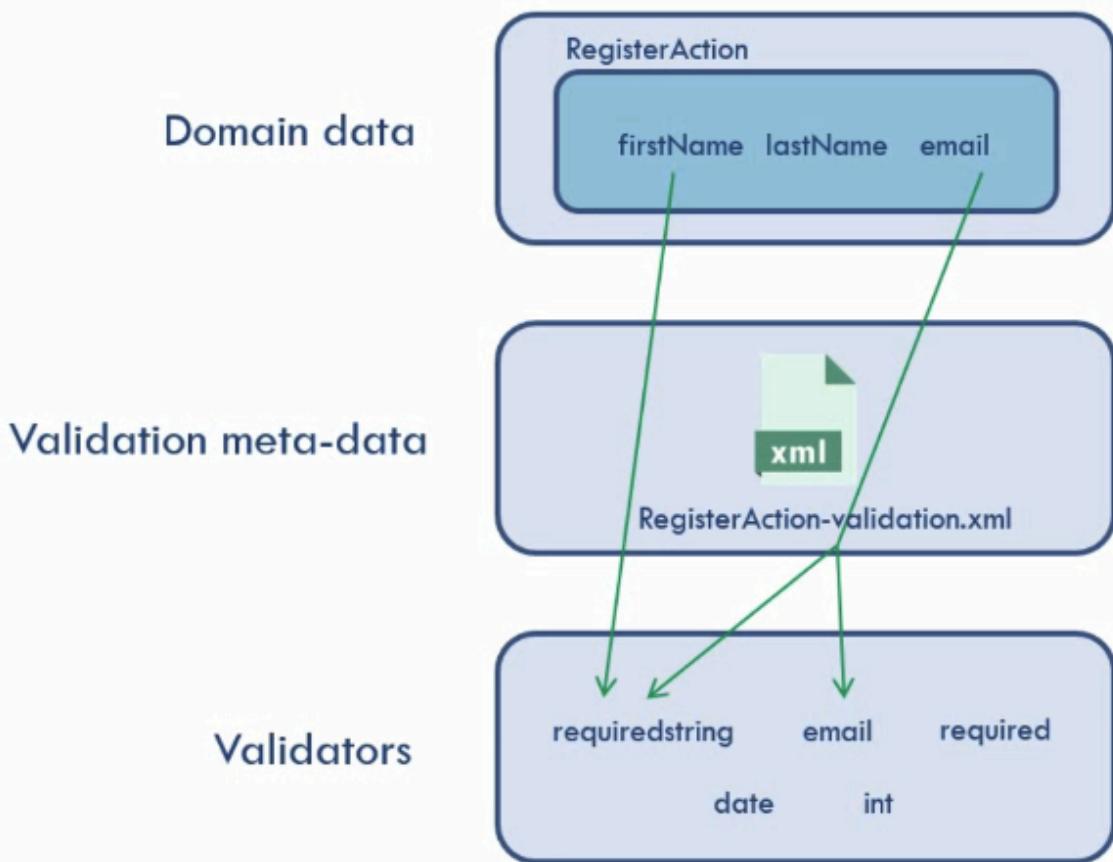
```
Tomcat v9.0 Server at localhost [Apache Tomcat] C:\Program Files\Java\jre1.8.0_91\bin\javaw.exe (07-Apr-2019, 11:21:16 PM)
INFO: Initializing ProtocolHandler [ http-nio-8088 ]
Apr 07, 2019 11:21:18 PM org.apache.coyote.AbstractProtocol init
INFO: Initializing ProtocolHandler ["ajp-nio-8009"]
Apr 07, 2019 11:21:18 PM org.apache.catalina.startup.Catalina load
INFO: Server initialization in [1,726] milliseconds
Apr 07, 2019 11:21:18 PM org.apache.catalina.core.StandardService startInternal
INFO: Starting service [Catalina]
Apr 07, 2019 11:21:18 PM org.apache.catalina.core.StandardEngine startInternal
INFO: Starting Servlet engine: [Apache Tomcat/9.0.16]
Apr 07, 2019 11:21:23 PM org.apache.jasper.servlet.TldScanner scanJars
INFO: At least one JAR was scanned for TLDs yet contained no TLDs. Enable debug logg
Apr 07, 2019 11:21:23 PM org.apache.catalina.util.SessionIdGeneratorBase createSecur
WARNING: Creation of SecureRandom instance for session ID generation using [SHA1PRNG]
Apr 07, 2019 11:21:27 PM org.apache.jasper.servlet.TldScanner scanJars
INFO: At least one JAR was scanned for TLDs yet contained no TLDs. Enable debug logg
ERROR StatusLogger Log4j2 could not find a logging implementation. Please add log4j-
TestInterceptor - init() called
AgeGroupInterceptor - init() called
Apr 07, 2019 11:21:29 PM org.apache.coyote.AbstractProtocol start
INFO: Starting ProtocolHandler [ "http-nio-8088" ]
Apr 07, 2019 11:21:29 PM org.apache.coyote.AbstractProtocol start
INFO: Starting ProtocolHandler [ "ajp-nio-8009" ]
Apr 07, 2019 11:21:29 PM org.apache.catalina.startup.Catalina start
INFO: Server startup in [10,824] milliseconds
TestInterceptor - Pre-processing
AgeGroupInterceptor - Pre-processing
execute() method called
AgeGroupInterceptor - Post-processing
TestInterceptor - Post-processing
```

Validation Framework



There 3 main components in the validation framework:-

- Domain data
- Validation meta-data
- Validators



Domain data means business fields

Validation meta-data mapping between business fields and validators

Basic Validation

vs

Validation Framework

Basic Validation

- Workflow interceptor is involved.
- When the workflow interceptor fires, it first checks if the Action implements the Validateable interface.
- If yes, then workflow interceptor will invoke the Action's validate() method.
- If the validation fails, the workflow interceptor will stop the execution of the Action and return a result code.

Validation Framework

- Validation interceptor is involved.
- Validation interceptor is responsible for executing all validations specified in Validation meta-data (i.e validation.xml).

```
<interceptor-stack name="defaultStack">
    <interceptor-ref name="exception"/>
    <interceptor-ref name="alias"/>
    <interceptor-ref name="servletConfig"/>
    <interceptor-ref name="i18n"/>
    <interceptor-ref name="prepare"/>
    <interceptor-ref name="chain"/>
    <interceptor-ref name="scopedModelDriven"/>
    <interceptor-ref name="modelDriven"/>
    <interceptor-ref name="fileUpload"/>
    <interceptor-ref name="checkbox"/>
    <interceptor-ref name="datetime"/>
    <interceptor-ref name="multiselect"/>
    <interceptor-ref name="staticParams"/>
    <interceptor-ref name="actionMappingParams"/>
    <interceptor-ref name="params"/>
    <interceptor-ref name="conversionError"/>
    <interceptor-ref name="validation">
        <param name="excludeMethods">input,back,cancel,browse</param>
    </interceptor-ref>
    <interceptor-ref name="workflow">
        <param name="excludeMethods">input,back,cancel,browse</param>
    </interceptor-ref>
    <interceptor-ref name="debugging"/>
</interceptor-stack>
```

```
<interceptor-ref name="validation" />
<interceptor-ref name="workflow" />
```

When to use both validations at the same time ?

- It is preferred to use the Validation Framework
 - Validators are reusable components.
 - Separates the validation logic from the Action class.
- Use both when at the same time when:-
 - Specific validation requirement and you also have some generic validation requirement.

Field Validators and Non-field Validators

Field Validators

- Targeted to a specific field.
- Lets us group multiple validators for a particular field together.

```
<field name="email">
    <field-validator type="requiredstring">
        <message>Email is required</message>
    </field-validator>
    <field-validator type="email">
        <message>Must provide a valid email</message>
    </field-validator>
</field>
```

Field Validators

```
<validator type="requiredstring">
    <param name="fieldName">email</param>
    <message>Email is required</message>
</validator>
<validator type="email">
    <param name="fieldName">email</param>
    <message>Must provide a valid email</message>
</validator>

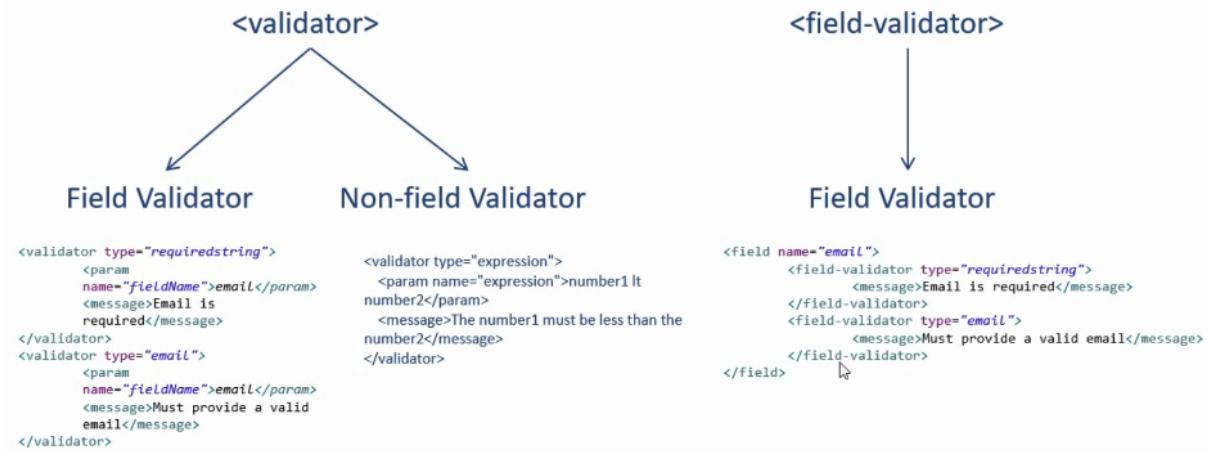
<field name="email">
    <field-validator type="requiredstring">
        <message>Email is required</message>
    </field-validator>
    <field-validator type="email">
        <message>Must provide a valid email</message>
    </field-validator>
</field>
```

Non-field Validators

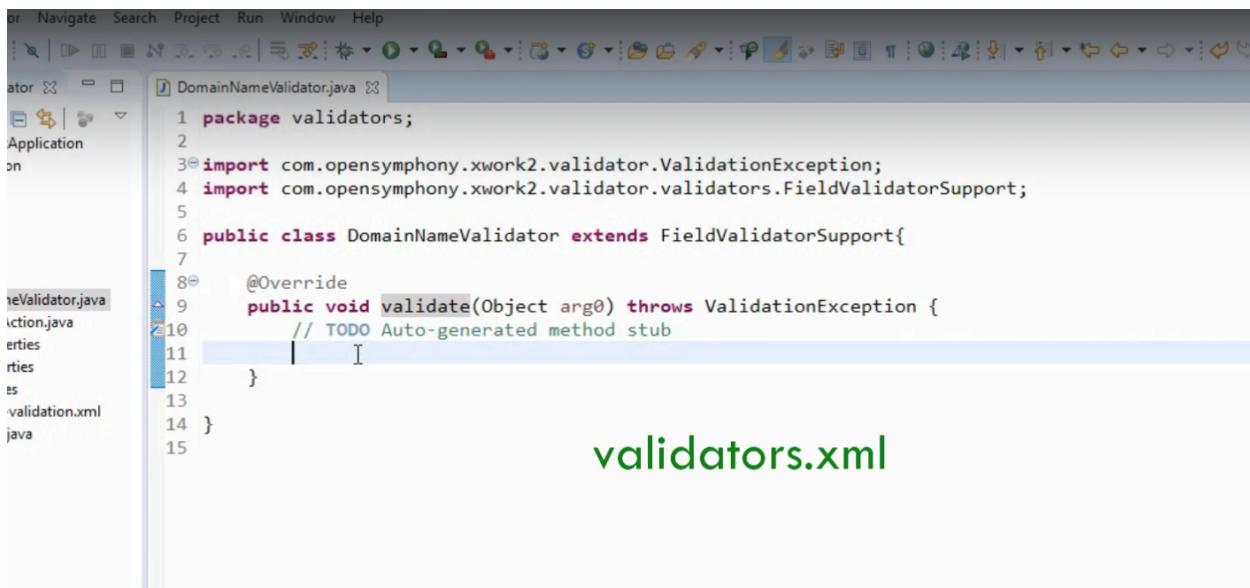
- Not targeted to a specific field.

```
<validator type="expression">
    <param name="expression">number1 lt number2</param>
    <message>The number1 must be less than the number2</message>
</validator>
```

Struts 2 Validation Framework



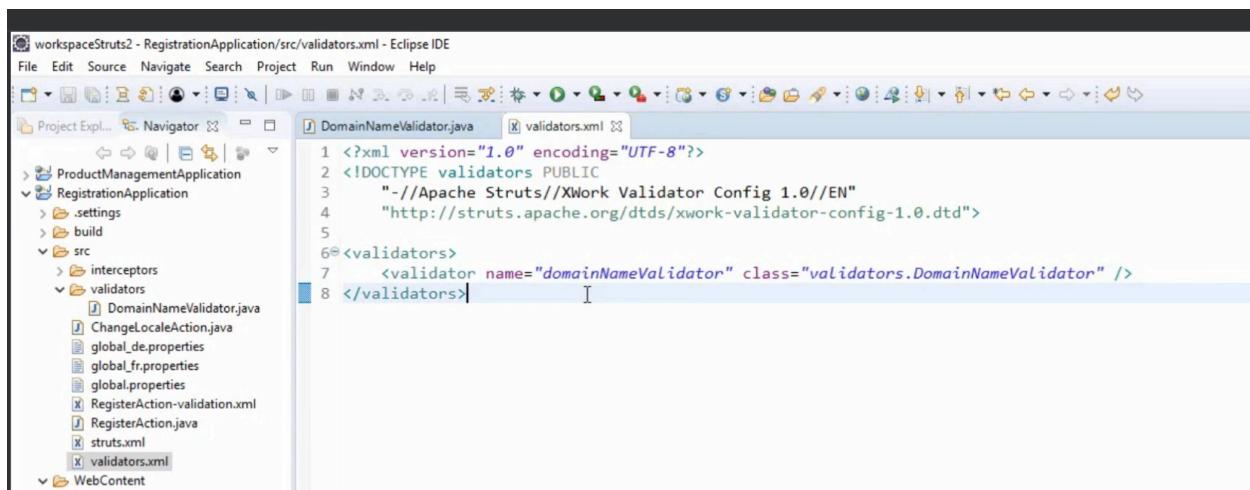
Create custom validator



```
1 package validators;
2
3 import com.opensymphony.xwork2.validator.ValidationException;
4 import com.opensymphony.xwork2.validator.validators.FieldValidatorSupport;
5
6 public class DomainNameValidator extends FieldValidatorSupport{
7
8     @Override
9     public void validate(Object arg0) throws ValidationException {
10         // TODO Auto-generated method stub
11     }
12 }
13
14
15
```

validators.xml

Mention this custom validator java class in the validators.xml



```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE validators PUBLIC
"-//Apache Struts//XWork Validator Config 1.0//EN"
"http://struts.apache.org/dtds/xwork-validator-config-1.0.dtd">
<validators>
    <validator name="domainNameValidator" class="validators.DomainNameValidator" />
</validators>
```

Create validators.xml as shown above. Specify that name in the registration-validation.xml file.

workspaceStruts2 - RegistrationApplication/src/RegisterAction-validation.xml - Eclipse IDE

File Edit Source Navigate Search Project Run Window Help

Project Explor... Navigator □ DomainNameValidator.java validators.xml RegisterAction-validation.xml global.properties

ProductManagementApplication
RegistrationApplication
.settings
build
src
interceptors
validators
DomainNameValidator.java
ChangeLocaleAction.java
global_de.properties
global_fr.properties
global.properties
RegisterAction-validation.xml
RegisterAction.java
struts.xml
validators.xml
WebContent
META-INF
WEB-INF
register.jsp
welcome.jsp
.classpath
.project
Servers
Struts2Tags
Struts2Test

16 <message key="error.gender.required" />
17 </validator>
18 <validator type="required">
19 <param name="fieldName">age</param>
20 <message key="error.age.required" />
21 </validator>
22 <validator type="int">
23 <param name="fieldName">age</param>
24 <param name="min">18</param>
25 <message key="error.age.range" />
26 </validator>
27 <field name="email">
28 <field-validator type="requiredstring">
29 <message key="error.email.required" />
30 </field-validator>
31 <field-validator type="email">
32 <message key="error.email.valid" />
33 </field-validator>
34 <field-validator type="domainNameValidator">
35 <message key="error.email.validdomain" />
36 </field-validator>
37 </field>
38 </validators>

Design Source

Markers Properties Servers Data Source Explorer Snippets Console

Tomcat v9.0 Server at localhost [Stopped]

