MODULE 9

INTERNATIONALIZATION

Françoise Dubisy

TABLE OF CONTENT

- What is Internationalization?
- Language Property Files
- Configuration for Internationalization
- Using Language Files in Web Pages
- Access to Translated Message in Java
- Translation of Error Messages
- Locale Chosen by the User
- Internationalization of Dynamic Data

What is Internationalization?

- To build localized applications
- To display texts according to the language chosen by the user
- Static labels
  - Using bundles
    - **ResourceBundleMessageSource**
- Dynamic values
  - From databases

Language Property Files

- Bundle of property files
- One property file by language
  - Containing values for static labels translated in this language
- Name of file
  - rootName_XX.properties
    - where rootName is the same for all files
    - and XX are two characters corresponding to the language

      fr, en, nl, de, …
  - E.g,
    - *general_en.properties*
    - *general_fr.properties*
    - *general_nl.properties*
    - + *general.properties (default)*

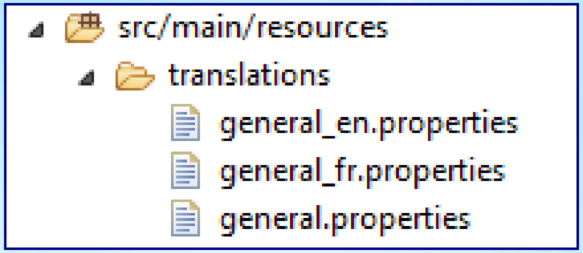
Language Property Files

- Each file contains **key**-**value** pairs
  - **Key** : identifier of the label
  - **Value** : translation of the label in the language
- *E.g,*
  - general_fr.properties:

```
firstName=Prénom
lastName=Nom de famille
welcome=Bienvenue !
age=Quel est ton âge?
sendButton=Envoyer
```

  - general_en.properties

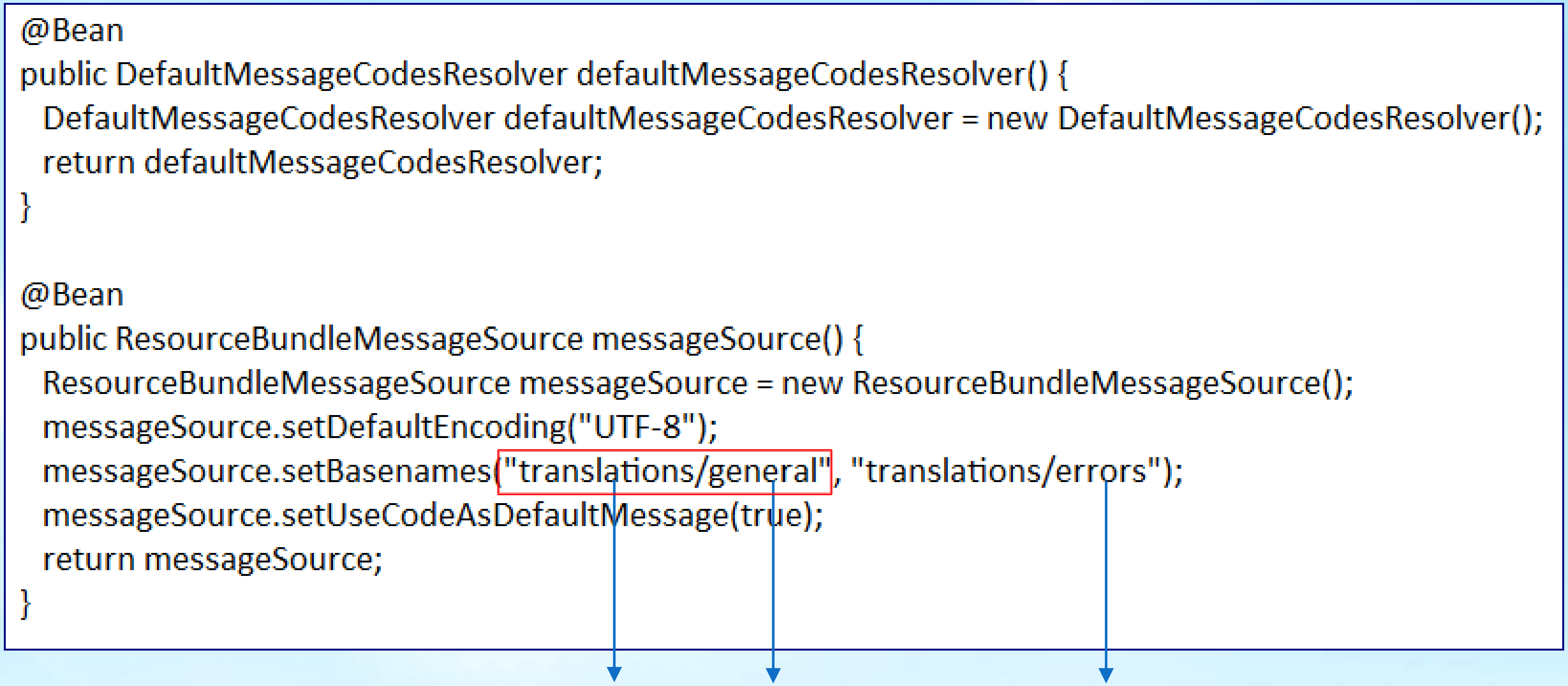
```
firstName=First Name
lastName=Last Name
welcome=Welcome !
age=How old are you?
sendButton=Send
```



```
src/main/resources
  translations
    general_en.properties
    general_fr.properties
    general.properties
```

Configuration for Internationalization

- In Configuration class add 2 bean declarations
  - **DefaultMessageCodesResolver**
  - **ResourceBundleMessageSource**



```
@Bean
public DefaultMessageCodesResolver defaultMessageCodesResolver() {
  DefaultMessageCodesResolver defaultMessageCodesResolver = new DefaultMessageCodesResolver();
  return defaultMessageCodesResolver;
}

@Bean
public ResourceBundleMessageSource messageSource() {
  ResourceBundleMessageSource messageSource = new ResourceBundleMessageSource();
  messageSource.setDefaultEncoding("UTF-8");
  messageSource.setBasenames("translations/general", "translations/errors");
  messageSource.setUseCodeAsDefaultMessage(true);
  return messageSource;
}
```

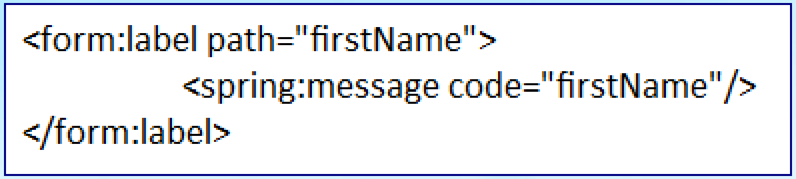
Package of the language property files

Root name of files

For error messages translations

Using Language Files in Web Pages

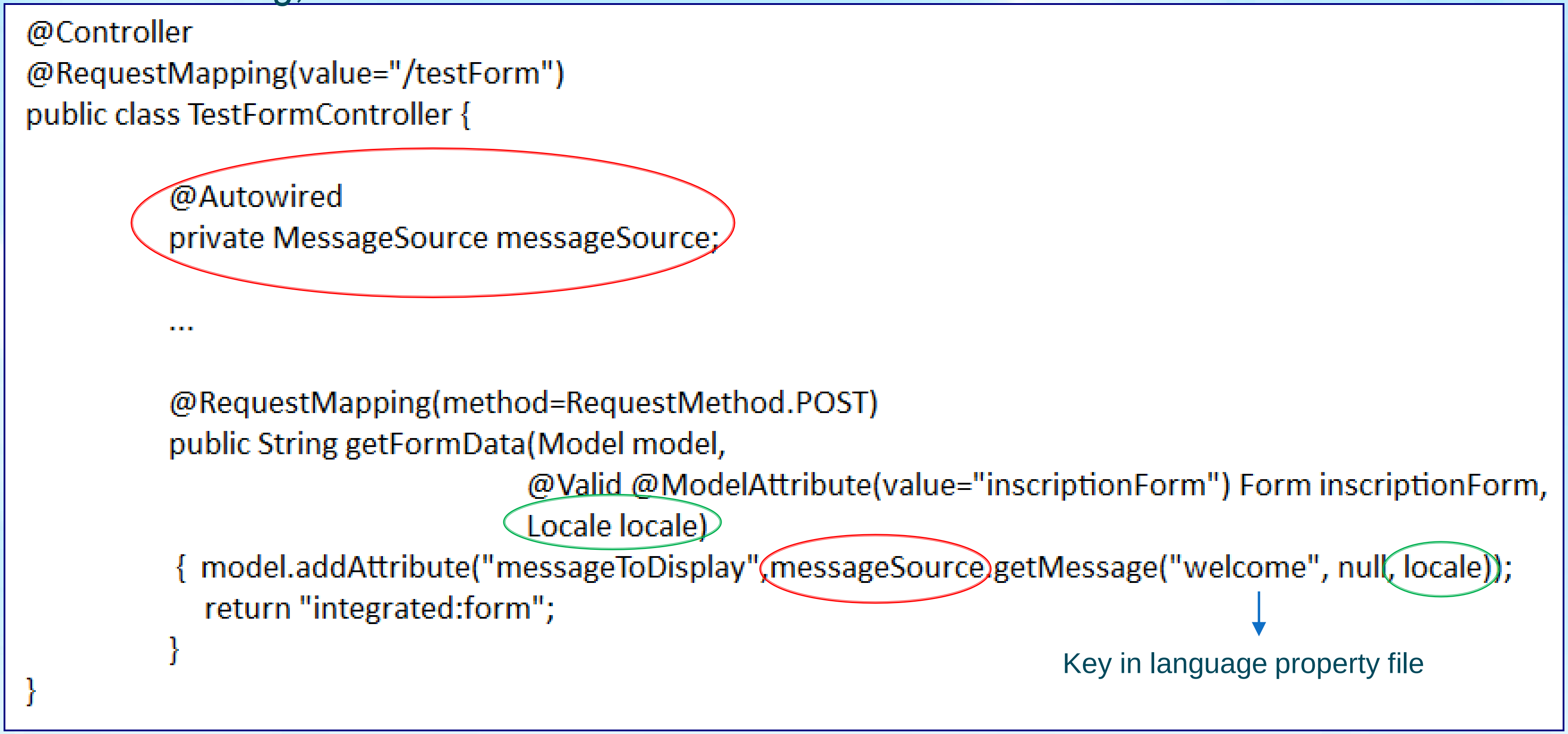
- **<spring:message>**
  - To access to the translated message
  - Attribute
    - **code**
      - Value of the key in language property file
- E.g,



```
<form:label path="firstName">
            <spring:message code="firstName"/>
</form:label>
```

Access to Translated Message in Java

- Access to ***ResourceBundleMessageSource*** through injection
  - Use ***getMessage*** method with key and locale
  - E.g,

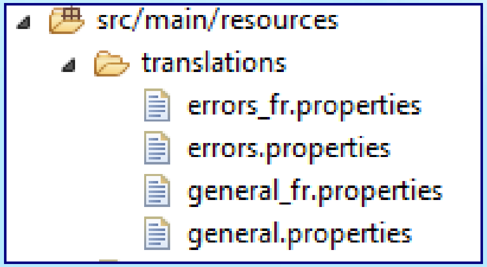


```
@Controller
@RequestMapping(value="/testForm")
public class TestFormController {

        @Autowired
        private MessageSource messageSource;

        ...

        @RequestMapping(method=RequestMethod.POST)
        public String getFormData(Model model,
                                        @Valid @ModelAttribute(value="inscriptionForm") Form inscriptionForm,
                                        Locale locale)
        { model.addAttribute("messageToDisplay",messageSource.getMessage("welcome", null, locale));
          return "integrated:form";
        }
}
```

Key in language property file

Translation of Error Messages

- Add language property files for error messages

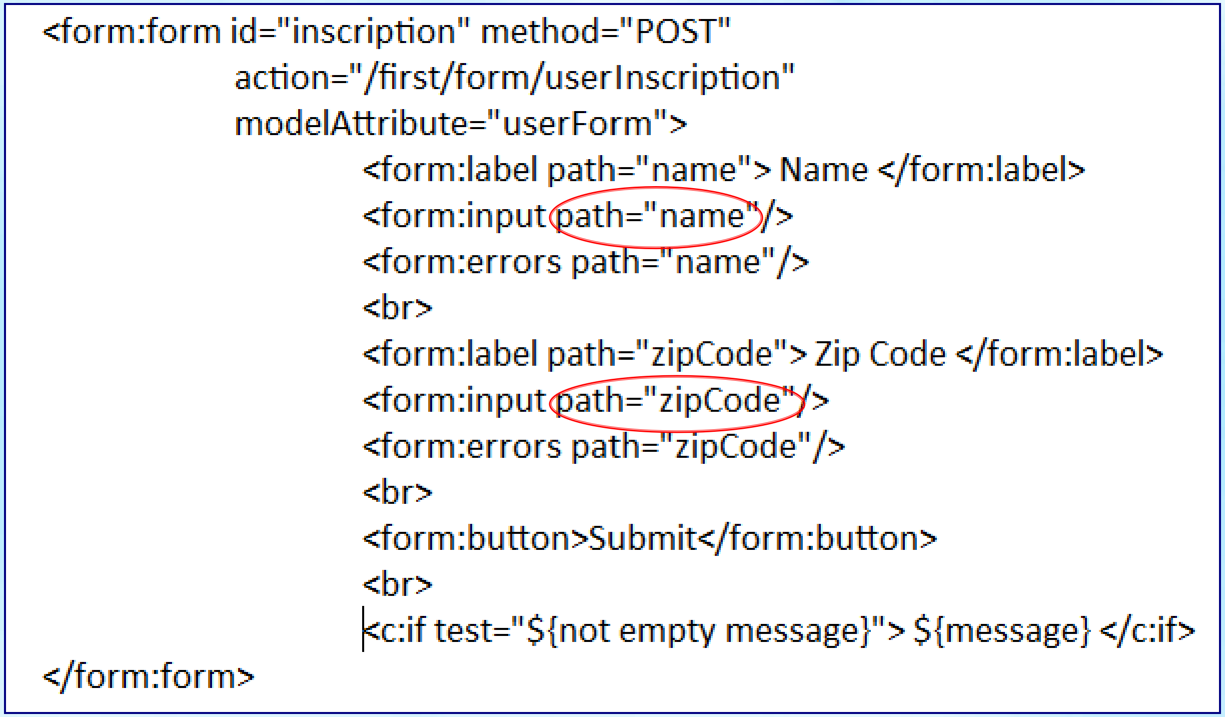


```
src/main/resources
  translations
    errors_fr.properties
    errors.properties
    general_fr.properties
    general.properties
```

- Key in language property files
  - Use NotNull, …
  - + either a class name or an attribute of the model

Translation of Error Messages

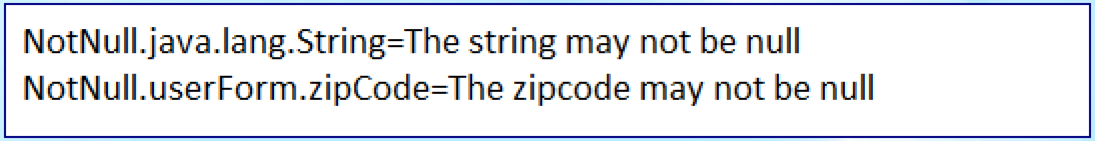
- E.g,



```
<form:form id="inscription" method="POST"
           action="/first/form/userInscription"
           modelAttribute="userForm">
                <form:label path="name"> Name </form:label>
                <form:input path="name"/>
                <form:errors path="name"/>
                <br>
                <form:label path="zipCode"> Zip Code </form:label>
                <form:input path="zipCode"/>
                <form:errors path="zipCode"/>
                <br>
                <form:button>Submit</form:button>
                <br>
                <c:if test="${not empty message}"> ${message} </c:if>
</form:form>
```

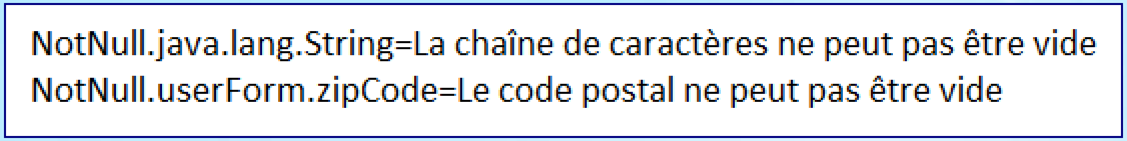
Translation of Error Messages

- errors.properties



```
NotNull.java.lang.String=The string may not be null
NotNull.userForm.zipCode=The zipcode may not be null
```

- errors_fr.properties



```
NotNull.java.lang.String=La chaîne de caractères ne peut pas être vide
NotNull.userForm.zipCode=Le code postal ne peut pas être vide
```

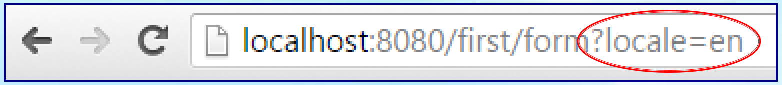
Locale Chosen by the User

- The user can choose the language
  - E.g, by a clic on a icon
    - Usually representing flags

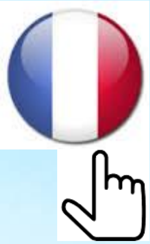
Locale Chosen by the User

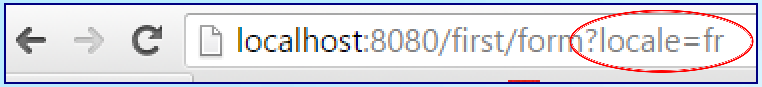
- How to do?
  - Add a locale parameter to each url. E.g, *...?locale=fr*
    - See definition of button in jsp pages
  - Create a session cookie
    - To store the chosen locale
    - In Configuration class
      - Use ***CookieLocaleResolver***
  - Use an interceptor to intercept request before call of controllers
    - That catches the locale parameter and places it in the session cookie
    - In Configuration class
      - Use ***LocaleChangeInterceptor***

Locale Chosen by the User – *jsp page*



localhost:8080/first/form?locale=en



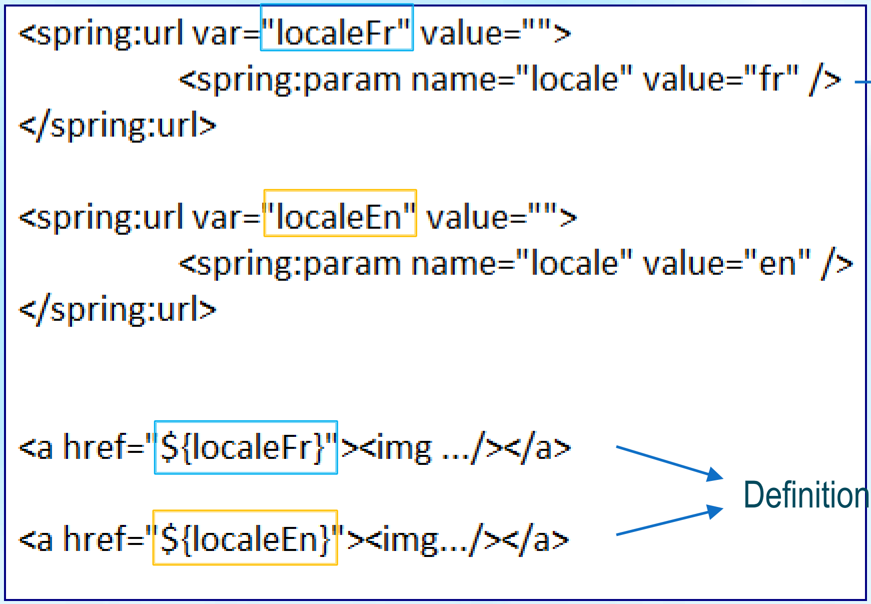


localhost:8080/first/form?locale=fr

- Use ***<spring:url>*** to define url
  - Use ***<spring:param>*** to add parameter to url

Locale Chosen by the User – *jsp page*

- E.g,



```
<spring:url var="localeFr" value="">
            <spring:param name="locale" value="fr" />
</spring:url>

<spring:url var="localeEn" value="">
            <spring:param name="locale" value="en" />
</spring:url>


<a href="${localeFr}"><img .../></a>

<a href="${localeEn}"><img.../></a>
```

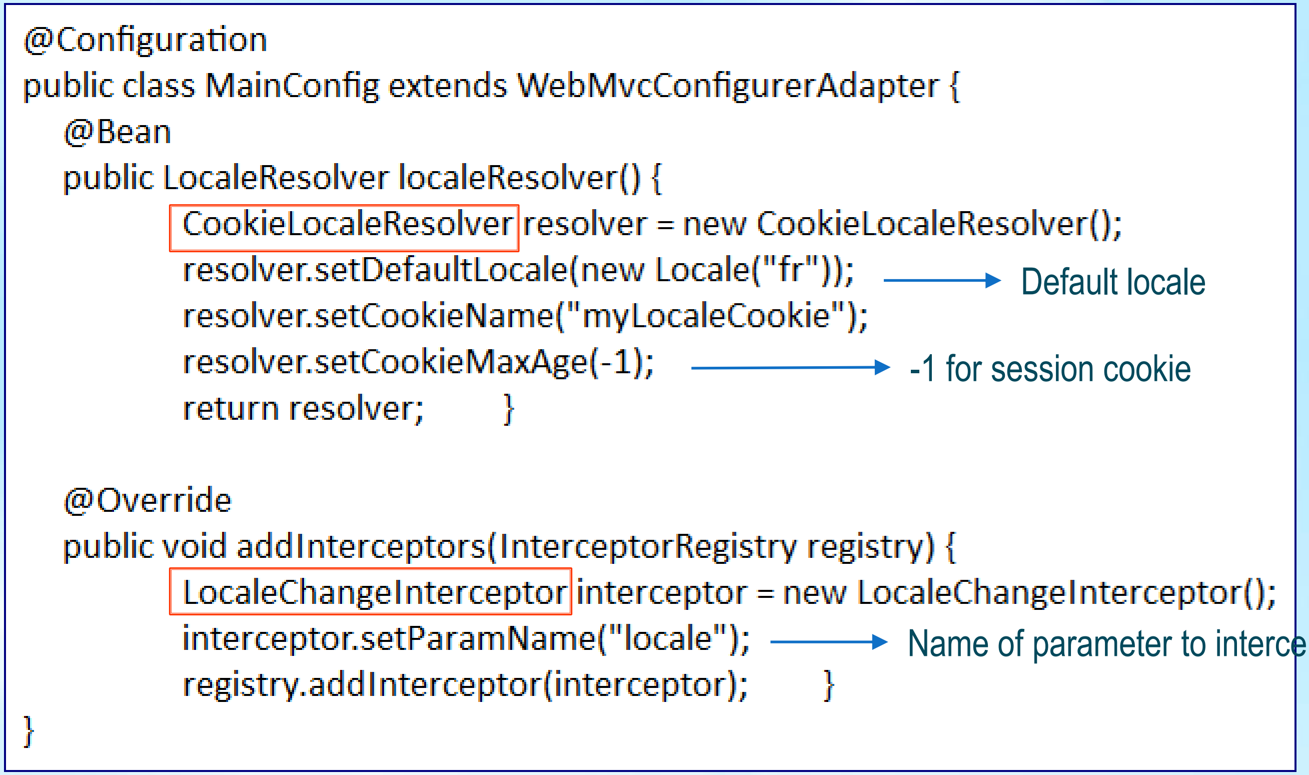
Add "?locale=fr" to url

Add "?locale=en" to url

Definition of buttons using spring:url

Locale Chosen by the User – *Configuration*

- In Configuration class



```
@Configuration
public class MainConfig extends WebMvcConfigurerAdapter {
    @Bean
    public LocaleResolver localeResolver() {
            CookieLocaleResolver resolver = new CookieLocaleResolver();
            resolver.setDefaultLocale(new Locale("fr"));
            resolver.setCookieName("myLocaleCookie");
            resolver.setCookieMaxAge(-1);
            return resolver;        }

    @Override
    public void addInterceptors(InterceptorRegistry registry) {
            LocaleChangeInterceptor interceptor = new LocaleChangeInterceptor();
            interceptor.setParamName("locale");
            registry.addInterceptor(interceptor);       }
}
```

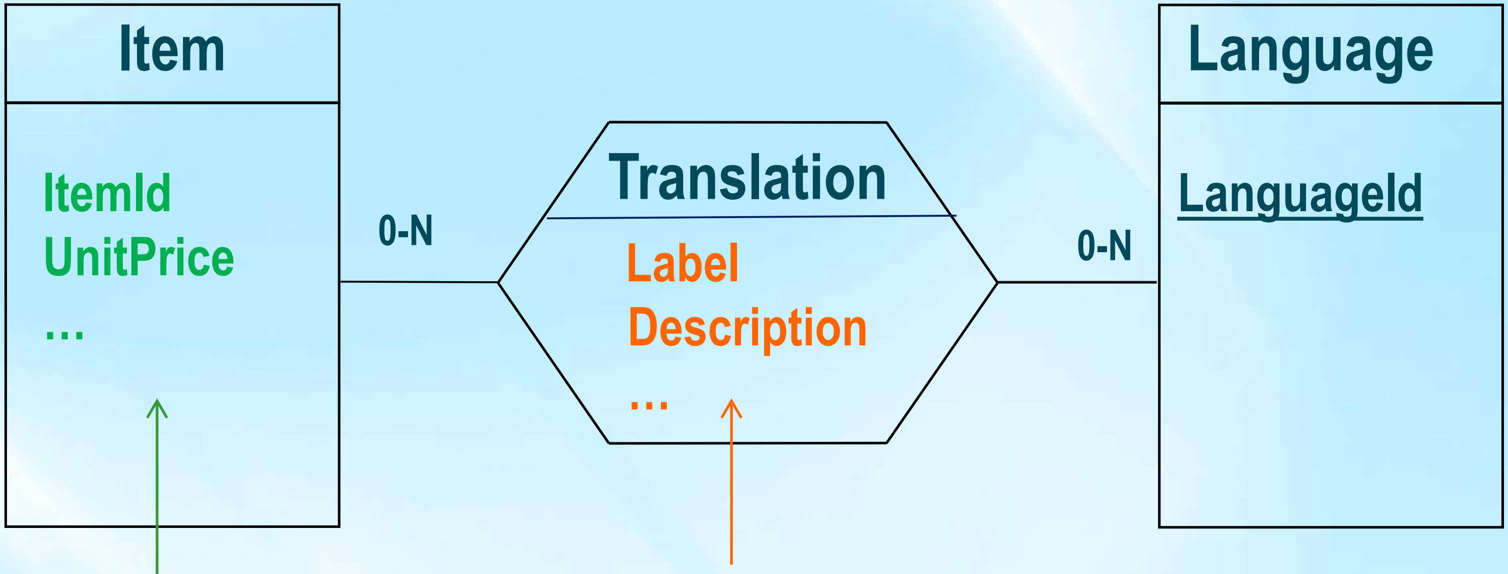
Default locale

-1 for session cookie

Name of parameter to intercept in url

Internationalization of Dynamic Data

- Translation of labels in database
- E.g,



Item

ItemId
UnitPrice
…

0-N

Translation

Label
Description
…

0-N

Language

<u>LanguageId</u>

Characteristics of item
without translation

Characteristics of item
for which translation is needed