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Thymeleaf

=========

(As alternate to jsp pages)

- => Another UI Technology that is build on the top of html for dynamic web pages
- => only html gives static web pages.. html tags+ thymeleaf tags give dynamic webpages. It is light weight alternate to heavy weight jsp pages..
- => In the execution of jsp page lot of memory and lot of cpu time is required becoz interanlly translate's ajsp equalent servlet comp and creates multiple implicit objs (9) if used or not used.. for all these things lot of memory and cpu time required.
- =>To overcome the above problems of jsp pages use thymeleaf as lightweight alternate for rendering dynamic webpages...
- => We need to write thymeleaf tags in html tags.. by importing thymeleaf namespace by specifying its namespace uri..

<html

</html>

mvc

xmlns:th="https://www.thymeleaf.org">

=>Spring boot gives built-in support of thymeleaf UI by giving default prefix is <classpath>/templates/

=>

default suffix is .html

(location)

(file extension)

=>html pages are static web pages =>html +thymeleaf pages are dynamic webpages => jsp pages are dynamic web pages note:: Thymeleaf namespace is the library that contains set of tags .every name space is identified with its namespace uri

=>Thymeleaf can be used only in java env.. =>thymeleaf file extension must be .html file

(classpath here is src/main/resources folder)

To use thymeleaf in spring boot add this starter to pom.xml

<!-- https://mvnrepository.com/artifact/org.springframework.boot/spring-boot-starter-thymeleaf --> <dependency>

<groupId>org.springframework.boot</groupId>

<artifactId>spring-boot-starter-thymeleaf</artifactId>

<version>

</dependency>

-</version>

Current spring boot version

note:: we can not mixup thymeleaf and jsp UI togather in a single spring MVC or spring Boot MVC web application.

=>To execute thymeleaf code Thymeleaf engine is required

which will come becoz this jar file.. This engine converts thymeleaf tags to html code.. and sends to browser as response..

- => Standard jsp tags identified with fixed prefix called <jsp: xxxx> and similary thymeleaf tags are indentified with <th: xxx> prefix (In html tags the attributes will be prefixed with "th" to add thymeleaf support)
- => Popular symbols in thymeleaf programming
- @ --->to specify Location (/<globalpath>/<request path>)
- ---> To read data from container managed scopes like model attributes *---> To bind/link data to form comps (useful only in thymeleaf forms) (model properties, ref data)
- a. To read data from model attributes/container managed scopes
- => block scope, method scope, instance scope, class scope, thread scope are JVM managed scopes
- => request, session, application, page and etc.. are WebContainer managed scopes
- => singleton, prototype, request, session, application, websocket and etc.. are IOC container managed scopes
- -> for primitive/wrapper/String type model attrbutes th:text="\${<attribute name>}"

```
(eg: <span th:text="${wMsg}"/>)
```

- →> for object type model attrbutes th:text="\${<objectName>}" eg)
- -> for getting property values from Object type model attrbutes th:text="\${<objectName>.<property name>}" (eg:) -> for looping through arrays/collection th:each="<counter variable>:\${<collection/array type attribute>1"
- b. To display images (To link image file to tag)

c. To Link/map with hyperlink

<a th:href="@{/path}"> xxxx

d.To Link/map css file

<link rel="stylesheet" th:href="@{/path}">

e. To Link/map java script fle

<script type="text/javascript" th:src="@{/path}"> </script>

f) Thymeleaf forms ar bidirencing)

(eg:

acts like for loop

 <std>

while working with thymeleaf, we must take controller having class level global path using @RequestMapping("/...") annotation.

(Global path)

[Global path for controller class is mandatory]

forms i.e they support DataBinding(writing form data to model class obj) and

DataRendering (writing handler methods supplied model attributes/model class obj data to form comps)

=> To specify action url <form_th:action="@global path/request path}" > (alternate to <frm:form

```
action="..."/>)
=> For binding model class obj data/model attributes data to form comps (for form backing object operation)
->
<form th:object="${model attribute name/object name of model clas}"> (alternate to <frm:from</p>
modelAttribute="....">)
=> For binding model class obj data /model attributes data to form comps
<input type="text" th:field="*<model class property name/model attrobute name>}"> (alternate to <frm:input
path="..."/>)
(ref data)
What is the difference b/w
attrs
th:text and th:field.
in thymeleaf
-----
======:
data
(for Data rendering)
(for, Data Binding activity)
th:text is given to read. from different scopes and to display them on browser.. like reading and leaf
displaying model class obj data and model attrbutes data.. (can be used in thyme forms and non-forms env..)
th:field is given to bind model class obj property values /model attribute values(reference data) to form
comps (can be used only in thymeleaf forms)
Converting MiniProject to Thymeleaf UI based Application
-----
step1) add thymeleaf starter to pom.xml file
<dependency>
<groupId>org.springframework.boot</groupId>
<artifactId>spring-boot-starter-thymeleaf</artifactId>
</dependency>
step2) Provide global path to controller class
@Controller
@RequestMapping("/employee") //global path public class EmployeeController {
}
using
* we can remove
JSTL jar files from pom.xml
note:: while thymeleaf tags .. the global path
```

```
for controller is mandatory.. (to avoid clashes between request paths of different controller class)
step3) copy is.images folders of webapp/webcontent to "static" folder of src/main/resources folder
and WEB-INF/pages folder jsp files to template folder of "src/main/resources" folder, change .jsp extension
to .html
#src/main/resources static

√ images

add.jfif
delete.jfif
edit.jpg home.jfif
templates
edit_employee.html home.html show_emps.html application.properties
we can comment view resolver cfg in application.properties ##View Resolver
#spring.mvc.view.prefix=/WEB-INF/pages/
#spring.mvc.view.suffix=.jsp
refer ✓ MS BootMVCProj20-MiniProject-CURD-Thymeleaf [boot]
note:: we can delete images, js folders of src/main/webapp
folder and src/main/webapp/WEB-INF/pages folder
to
step4) modify "template" folder .html files code thymeleaf code from jsp code.
step5) Run the Application...
home.html
<html xmlns:th="http://www.thymeleaf.org">
<h1 style="color:red;text-align: center">Spring boot MVC - Mini Project</h1>
<h2 style="text-align:center"><a th:href="@{/employee/emp report}">Generate Employee Report</a></h2>
<br>
<center> <a th:href="@{/employee/emp report}"><img_th:src="@{/images/report.png}" width="100"</pre>
height="100"></a></center>
show_employee_report.html
<html xmlns:th="http://www.thymeleaf.org">
<div th:if="${!empsList.empty}">
<h1 style="color:red;text-align:center"> Employees Report </h1>
empno emp nameJob  salary deptno
 operations 
<span th:text="${emp.empno}"/>
<span th:text="${emp.ename}"/>
```

 <span_th:text="\${emp.sal}"/>

```
<span th:text="${emp.deptno}"/>
<a th:href="@{/employee/emp_edit(no=${emp.empno})}"><img th:src="@{/images/edit.png}"
width="30px" height="30px"></a>
<a th:href="@{/employee/emp_delete(no=${emp.empno})}" onclick="return confirm('Do u want to delete the
employee')"><img th:src="@{/images/delete.png}" width="30px" height="30px"></a>  
</div>
<div th:if="${empsList.empty}">
<h1 style="color:red;text-align:center"> Employees Not found </h1>
</div>
<center>
<h2 style="color:green;text-align:center" th:text="${resultMsg}"/>
<a th:href="@{/employee/emp_add}"><img th:src="@{/images/add.png}" width="40px" height="50px"> Add
Employee</a> &nbsp;&nbsp; <a_th:href="@{/employee/}"><img_th:src="@{/images/home.png}"
width="40px" height="50px">Home</a>
</center>
update_employee.html
<html xmlns:th="http://www.thymeleaf.org">
<h1 style="color:red;text-align:center">Update Employee</h1>
<form th:action="@{/employee/emp_edit}" th:object="${emp}" method="POST">
 Employee Number:: 
 <input type="text" th:field="*{empno}" readonly="true"/> 
 Employee Name:: 
 <input type="text" th:field="*{ename}"/> 
 Employee Desg:: 
 <input type="text" th:field="*{job}"/> 
 Employee salary::
 <input type="text" th:field="*{sal}"/> 
MMVCBootProj16-MiniProject-CURDOperations-thymeleaf [boot]
> Deployment Descriptor: MVCBootProj16-MiniProject-CURDOperation >Spring Elements
```

> JAX-WS Web Services

#src/main/java

- ✓ com.nt
- > BootMvcProj07MiniProjectCurd OperationsApplication.java
- >ServletInitializer.java

com.nt.controller

> EmployeeOperations Controller.java

com.nt.model

> Employee.java

com.nt.repository

> EmployeeRepository.java

com.nt.service

- > EmployeeMgmtServiceImpl.java
- > EmployeeMgmtService.java

src/main/resources

✓ static

images

add.png

 $\rightarrow \text{delete.png}$

edit.png

home.png

report.png

templates

home.html

register_employee.html

show_employee_report.html

update_employee.html

application.properties

- > #src/test/java
- > JRE System Library [JavaSE-17]

_

Maven Dependencies

Dept no

>

Deployed Resources

```
 <input type="text" th:field="*{deptno}"/>  
> src
> target
WHELP.md
mvnw
mvnw.cmd Mpom.xml
<input type="submit" value="Update Employee">
 <input type="reset" value="cancel"> 
</form>
register_employee.html
<html xmlns:th="http://www.thymeleaf.org">
<h1 style="color:red;text-align:center">Register Employee</h1>
<form th:action="@{/employee/emp_add}" th:object="${emp}" method="POST">
 Employee Name:: 
 <input type="text" th:field="*{ename}"/> 

 Employee Desg:: 
 <input type="text" th:field="*{job}"/> 
>
 Employee salary::
 <input type="text" th:field="*{sal}"/> 
 dept no 
 <input type="text" th:field="*{deptno}"/> 
 <input type="submit" value="submit">
 <input type="reset" value="cancel">
```

```
</form>
```

Boot strap (It is css++ and java script ++)

- => It is library that gives set of readymade CSS styles and java script libraries
- => These styles can be applied on the applications directly to format the results step1)

Link boot strap css by collecting from internet

step2) Apply CSS style classes at various levels

<div class="container" th:if="\${lempList.empty}">

step3) Test the application