Setup of Eclipse with new Jakarta EE support on latest Tomcat: and creation of Dynamic Web Project w/Servlet

ITEM 1= Transitioning from Java EE to opensource Jakarta EE READ THIS- <u>https://blogs.oracle.com/javamagazine/transition-from-java-ee-to-jakarta-ee</u>

The API JAR files had their Maven group ID changed from javax.* to jakarta.*,

ITEM 2= Install of Eclipse and setup project with A Jakarta Tomcat Container (for run time)based "Dynamic Web Project" Project in Eclipse

Install Eclipse IDE for Enterprise Java Developers (make sure you get the Enterprise Java Developer version).

>go to eclipse.org and find the LATEST version.

Example at time of creation of the document it was <u>https://www.eclipse.org/downloads/packages/release/2020-12/r/eclipse-ide-enterprise-java-developers</u>

ITEM 3= Create Dynamic Web Project with A Jakarta Tomcat Container (for run time)

NOTE: first time it will prompt you to install Tomcat if you do not have it installed

1) File ->New Project-> Dynamic Web

 Specify name and select New Runtime (only need to do this first time) Lets use a version of Apache Tomcat (a simple servlet container) and then you will need to either find the local location or do a download and install

💽 New Dynamic Web Project	- D X 7
Dynamic Web Project Create a standalone Java-based Web Application or add it to a new or existing Enterprise	Application.
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Here I specified my C: drive for location to install

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OPTION 1: Creation of Dynamic Web Application with **No web.xml** (uses modern Annotations) in Eclipse with **Tomcat**

1) File ->New-> Dynamic Web Project

specify the name and do not select web.xml

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Resulting structure...notice there is no Servlet, no JSP or HTML but, just an empty project structure waiting for YOU to add those things

v	2	MyTestDynamicWebProjectNOWebXML	
	>	AX-WS Web Services	
	>	JRE System Library [JavaSE-15]	
		😬 src/main/java	
	>	🛋 Apache Tomcat v10.0 [Apache Tomcat v10.0]	
	>	🛅 Deployment Descriptor: MyTestDynamicWebProjectNOWebXN	
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		🗸 🗁 webapp	
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		V 🗁 WEB-INF	
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 Add a servlet (right click on src/main/java or on project and new -> other->servletor similar). Fill out the form with package name, servlet name and URL mapping(s) you wish.

Create Serv	let	_		×
Create Servl	et			S
Specify class f	ile destination.			
Project:	MyTestDynamicWebProjectNOWebXML		\sim	
Source folder:	/MyTestDynamicWebProjectNOWebXML/src/main/java		Br	owse
Java package:			Br	owse
Class name:	MyServlet			
Superclass:	javax.servlet.http.HttpServlet		Br	owse
Use an exist	ing Servlet class or JSP			
Class name:	MyServlet		Br	owse
?	< Back Next > Finish		Cance	el

Create Se	rvlet							
Create Serv	Create Servlet							
Enter servlet	deployment descriptor specific information.							
Name:	MyServlet							
Description:								
Initialization	parameters:							
Name URL mapping	JS:	Add Edit Remove						
/MyServlet		Add Edit Remove						
Asynchron	ious Support							
?	< Back Next > Finish	Cancel						

3) NOW YOU need to make sure you are using jakarat packages and not javax (so I manually change this in the servlet code). ---I am not sure why it defaults to the javax (older Java EE) rather than the newer jarkata EE package or how to fix this.

1			
1			
2			
3	⊖import	java.io.IOException;	Tomcat uses jakarta and nto javax
× 4	import	javax.servlet.ServletException,	for the last ** versions of Tomcat
5	import	jakarta.servlet.ServletException; 🌙	
8 6	import	javax.servlet.annotation.WebServlet; —	
7	import	jakarta.servlet.annotation.WebServlet,	
8	import	javax.servlet.http.HttpServlet; 🛶	SO YOU MUST replace the imports
9	import	jakarta.servlet.http.HttpServlet;	with the equivalent in the jakarta package
×10	import	javax.servlet.http.HttpServletRequest;	with the equivalent in the jukarta package
11	import	jakarta.servlet.http.HttpServletRequest	
<mark>¤1</mark> 2	import	<pre>javax.servlet.http.HttpServletResponse;</pre>	
13	import	jakarta.servlet.http.HttpServletResponse; 🦯	
14			
15	⊝ /**		
16	* Serv	<pre>/let implementation class MyServlet</pre>	
17	*/		

.....here is the result of my doing this. Notice the web annotation @WebServlet and here I specified 2 URL mappings that will work

import	java.io.IOException;
import	jakarta.servlet.*;
import	jakarta.servlet.annotation.*;
import	jakarta.servlet.http.*;

```
/*
import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;*/
/**
 * Servlet implementation class MyServlet
 */
@WebServlet({ "/MyServlet", "/lynne" })
public class MyServlet extends HttpServlet {
```

4) Run by right clicking on project and say run as. However, typically you will add index.html or jsp pages and those will be run instead of directly as server. to your dynamic web applications...but, that is another discussion.



NOTE as there is no index.* file and hence we get a 404...change the url you see here and append to it the web annotation endpoint. For example, I

will add /lynne to the end of the url and now it will invoke my servlet



Served at: /MyTestDynamicWebProjectNOWebXML

Because I have TWO url mappings specified in the annotation @WebServlet in my Servlet java code, I can use either of them to invoke the servlet. Here you can see the send running



OPTION 2: Creation of Dynamic Web Application with web.xml in

Eclipse with Tomcat

- 1) Step 1-3 are the same except you select the web.xml creation box.
- 2) Edit the web.xml file so that the Desired URL mappings for your new servlet are setup.

...here is an example for a servlet I created called LynneServlet that is mapped to /lynne and then you can see me running it and the corresponding url



ITEM 4= Adding html and jsp pages to your project

Create an html page to call the servlet class on a webpage

We are creating an html file that would call the servlet once we click on the link on web page. Create this file in WebContent folder. The path of the file should look like this: WebContent/index.html index.html

NOW lets create our index.html page that will invoke our sevlet. Right click on web folder and create NEW html file





NOW click on Run on your tomcat server RIGHT click on index.html -> run on server and select your tomcat server

💽 Run On Server		_		×
Run On Server				
Select which server to use				
How do you want to select the server?				
Choose an existing server				
O Manually define a new server				
Select the server that you want to use:				
type filter text				
Server	State			
v 🗁 localhost	-			_
Tomcat v10.0 Server at localhost	🔓 Stopped			
Apache Tomcat v10.0 supports J2EE 1.2, 1.3, 1.4, and Java EE Web modules.	5, 6, 7, 8 and Ja	karta EE 9	Co	lumns
Always use this server when running this project				
? < Back Next >	Finish		Canc	el

Here is the result of running index.html



AND clicking on the link I will get my servlet



NOTE you can add JSP file in the same fashion. Both JSP and HTML files will put under webapp directory and both can be directly run



ITEM 4: miscellaneous...tips, etc.

MAKE SURE your project has the Project Properties -> Java Build Bath- and it contains the Apache Tomcat (hit apply and close)

