

50
1972 - 2022
AÑOS
Transformando vidas



UNIVERSIDAD DE
MANIZALES®



Acreditación Institucional
de Alta Calidad

Resolución 4792 del 15 de mayo de 2019
Sede Manizales por vigencia de 6 años (2019-2025)



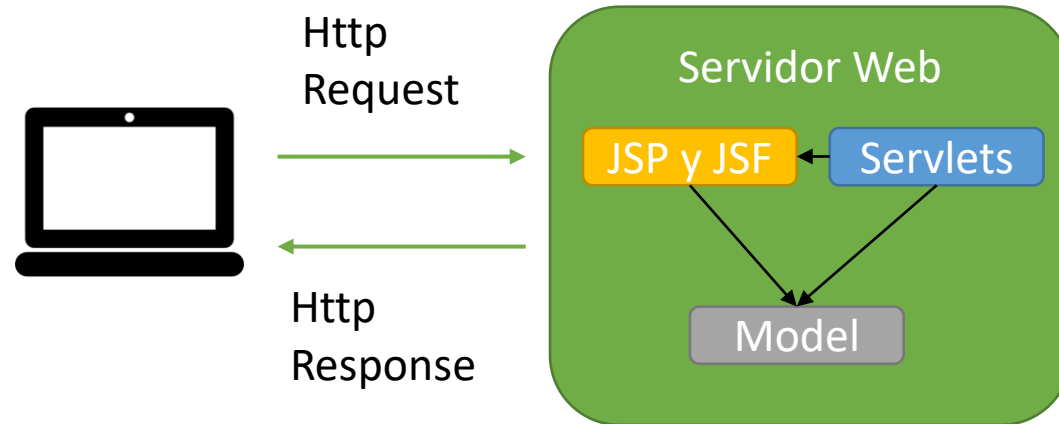
Diplomado

Programación Web Java JEE

Modalidad: Virtual

Duración: 80 horas

HTTP



HTTP

Métodos de petición HTTP (get, post, put, delete)

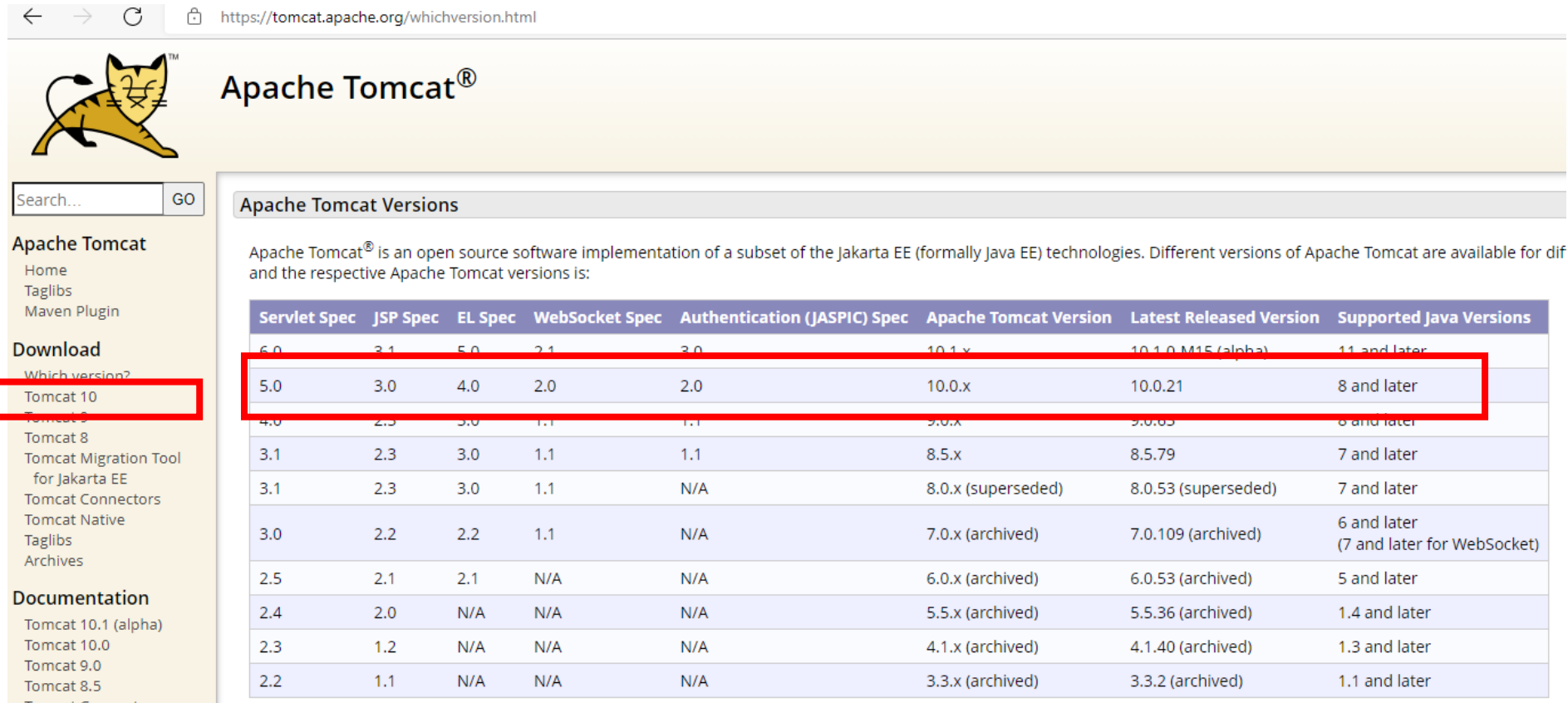
Cabeceras HTTP de petición

Cabeceras HTTP de respuesta

Códigos de estado de respuesta (404,200,500)

Apache Tomcat – instalación

<https://tomcat.apache.org/whichversion.html>



Apache Tomcat®

Search... GO

Apache Tomcat

- Home
- Taglibs
- Maven Plugin

Download

- Which version?
- Tomcat 10**
- Tomcat 9
- Tomcat 8
- Tomcat Migration Tool for Jakarta EE
- Tomcat Connectors
- Tomcat Native
- Taglibs
- Archives

Documentation

- Tomcat 10.1 (alpha)
- Tomcat 10.0
- Tomcat 9.0
- Tomcat 8.5
- Tomcat Connectors

Apache Tomcat Versions

Apache Tomcat® is an open source software implementation of a subset of the Jakarta EE (formerly Java EE) technologies. Different versions of Apache Tomcat are available for different operating systems and the respective Apache Tomcat versions is:

Servlet Spec	JSP Spec	EL Spec	WebSocket Spec	Authentication (JASPIC) Spec	Apache Tomcat Version	Latest Released Version	Supported Java Versions
6.0	3.1	5.0	2.1	3.0	10.1.x	10.1.0-M15 (alpha)	11 and later
5.0	3.0	4.0	2.0	2.0	10.0.x	10.0.21	8 and later
4.0	2.3	3.0	1.1	1.1	9.0.x	9.0.83	8 and later
3.1	2.3	3.0	1.1	1.1	8.5.x	8.5.79	7 and later
3.1	2.3	3.0	1.1	N/A	8.0.x (superseded)	8.0.53 (superseded)	7 and later
3.0	2.2	2.2	1.1	N/A	7.0.x (archived)	7.0.109 (archived)	6 and later (7 and later for WebSocket)
2.5	2.1	2.1	N/A	N/A	6.0.x (archived)	6.0.53 (archived)	5 and later
2.4	2.0	N/A	N/A	N/A	5.5.x (archived)	5.5.36 (archived)	1.4 and later
2.3	1.2	N/A	N/A	N/A	4.1.x (archived)	4.1.40 (archived)	1.3 and later
2.2	1.1	N/A	N/A	N/A	3.3.x (archived)	3.3.2 (archived)	1.1 and later

Apache Tomcat – instalación

https://tomcat.apache.org/download-10.cgi

checksums for every release file. After you download the file, you should calculate a checksum for y

Mirrors

You are currently using **https://d1cdn.apache.org/**. If you encounter a problem with this mirror, ple

Other mirrors:

10.0.21

Please see the [README](#) file for packaging information. It explains what every distribution contains.

Binary Distributions

- Core:
 - [zip \(pgp, sha512\)](#)
 - [tar.gz \(pgp, sha512\)](#)
 - [32-bit Windows zip \(pgp, sha512\)](#)
 - [64-bit Windows zip \(pgp, sha512\)](#)
 - [32-bit/64-bit Windows Service Installer \(pgp, sha512\)](#)
- Full documentation:
 - [tar.gz \(pgp, sha512\)](#)
- Deployer:
 - [zip \(pgp, sha512\)](#)
 - [tar.gz \(pgp, sha512\)](#)
- Embedded:
 - [tar.gz \(pgp, sha512\)](#)
 - [zip \(pgp, sha512\)](#)

- bin
- conf
- lib
- logs
- temp
- webapps
- work
- BUILDING
- CONTRIBUTING
- LICENSE
- NOTICE
- README
- RELEASE-NOTES
- RUNNING

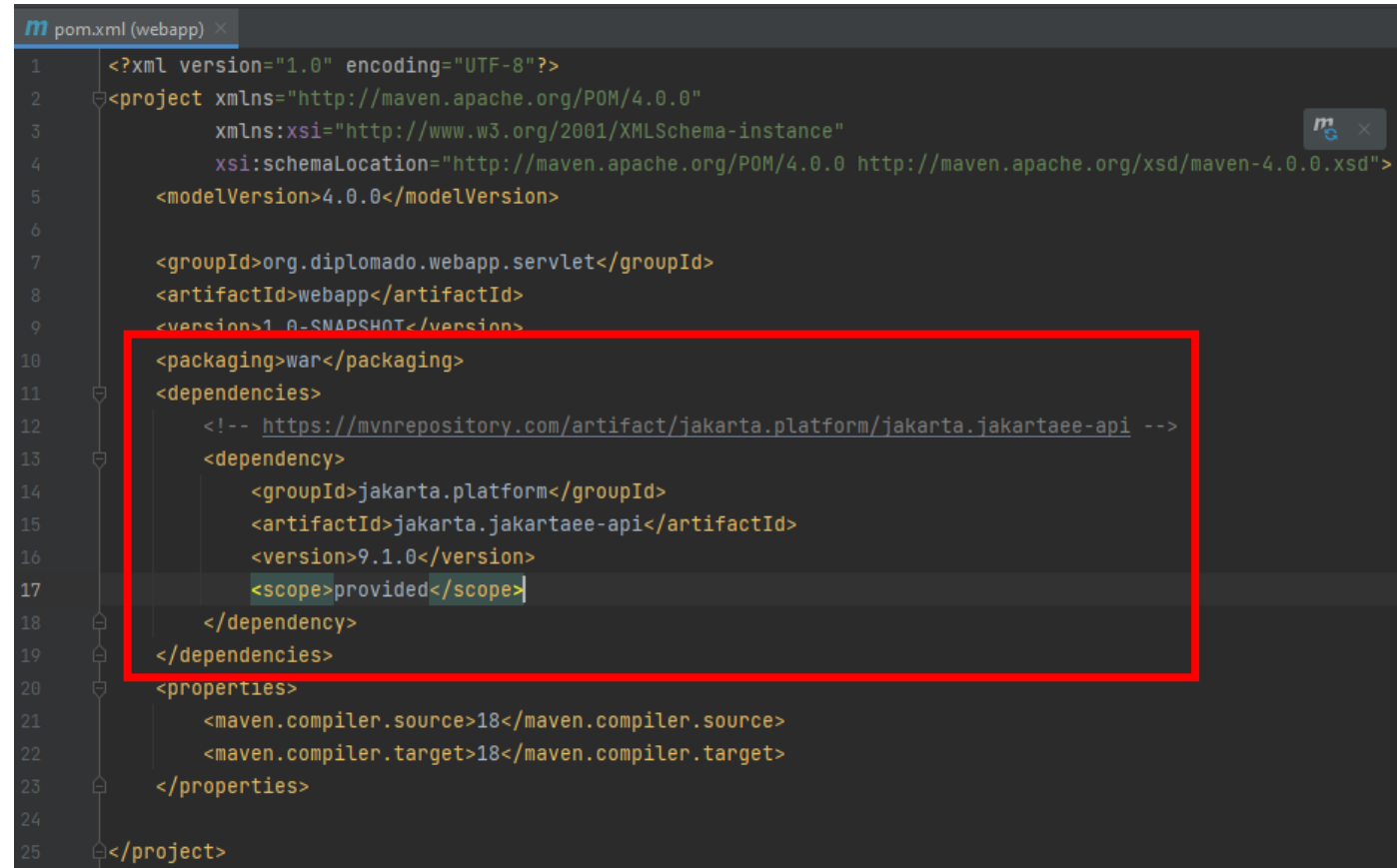
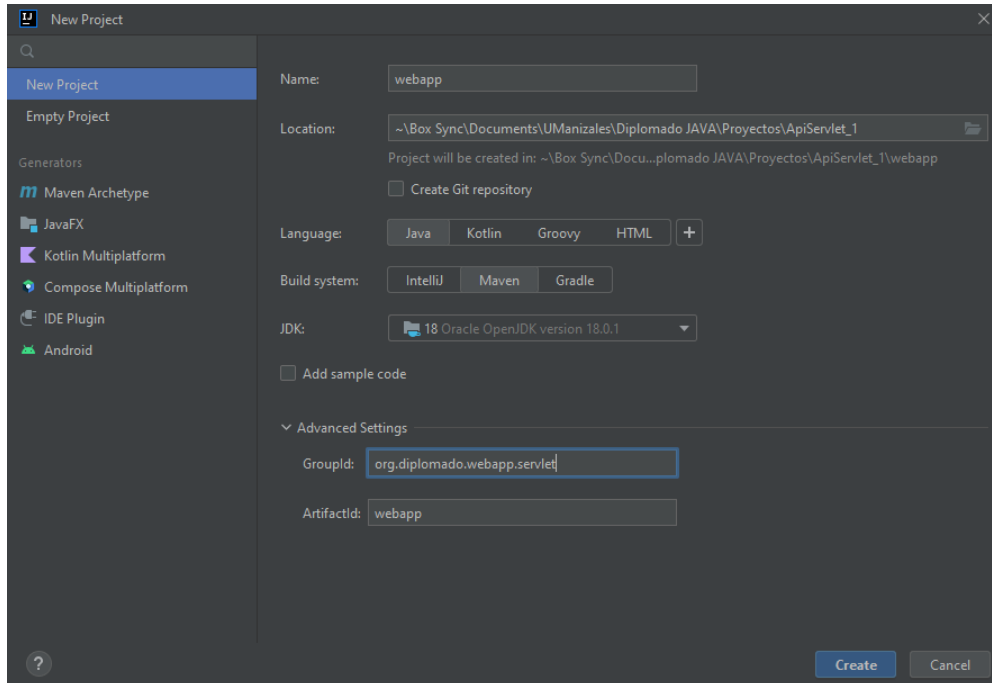
Apache Tomcat – instalación

File Explorer path: This PC > Documents > Cursos > apache-tomcat-10.0.21 > conf

	Name	Date modified	Type	Size
	catalina.policy	6/5/2022 6:42 PM	POLICY File	13 KB
	catalina	6/5/2022 6:42 PM	Properties Source ...	8 KB
	context	6/5/2022 6:42 PM	XML Document	2 KB
	jaspic-providers	6/5/2022 6:42 PM	XML Document	2 KB
	jaspic-providers.xsd	6/5/2022 6:42 PM	XSD File	3 KB
	logging	6/5/2022 6:42 PM	Properties Source ...	5 KB
	server	6/5/2022 6:42 PM	XML Document	7 KB
	tomcat-users	6/5/2022 6:42 PM	XML Document	3 KB
	tomcat-users.xsd	6/5/2022 6:42 PM	XSD File	3 KB
	web	6/5/2022 6:42 PM	XML Document	174 KB

```
37  <!--
38  <!--
39  <user username="admin" password="<must-be-changed>" roles="manager-gui"/>
40  <user username="robot" password="<must-be-changed>" roles="manager-script"/>
41  <!--
42  <!--
43  The sample user and role entries below are intended for use with the
44  examples web application. They are wrapped in a comment and thus are ignored
45  when reading this file. If you wish to configure these users for use with the
46  examples web application, do not forget to remove the <!-- .. --> that surrounds
47  them. You will also need to set the passwords to something appropriate.
48  <!--
49  <!--
50  <role rolename="tomcat"/>
51  <role rolename="role1"/>
52  <user username="tomcat" password="<must-be-changed>" roles="tomcat"/>
53  <user username="both" password="<must-be-changed>" roles="tomcat,role1"/>
54  <user username="role1" password="<must-be-changed>" roles="role1"/>
55  <!--
56  <user username="admin" password="Asdf1234$" roles="admin,manager-gui,manager-script"/>
57  </tomcat-users>
58
```

Proyecto – introducción



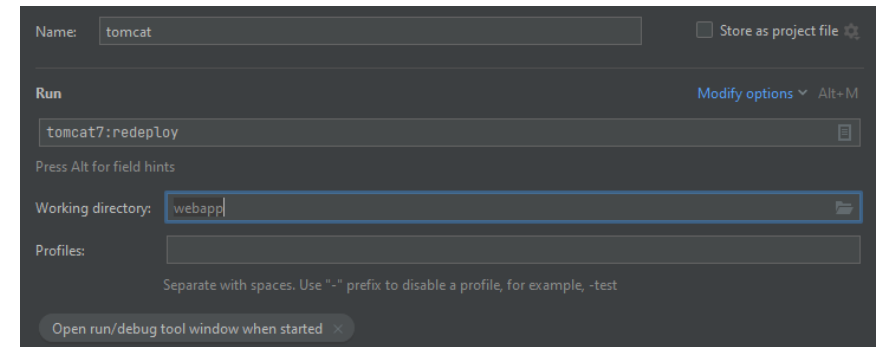
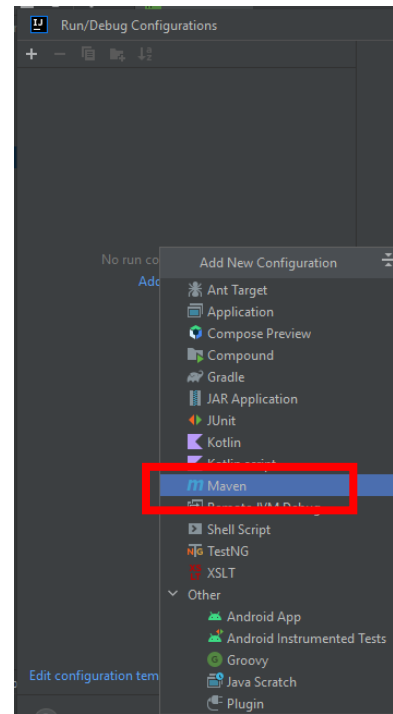
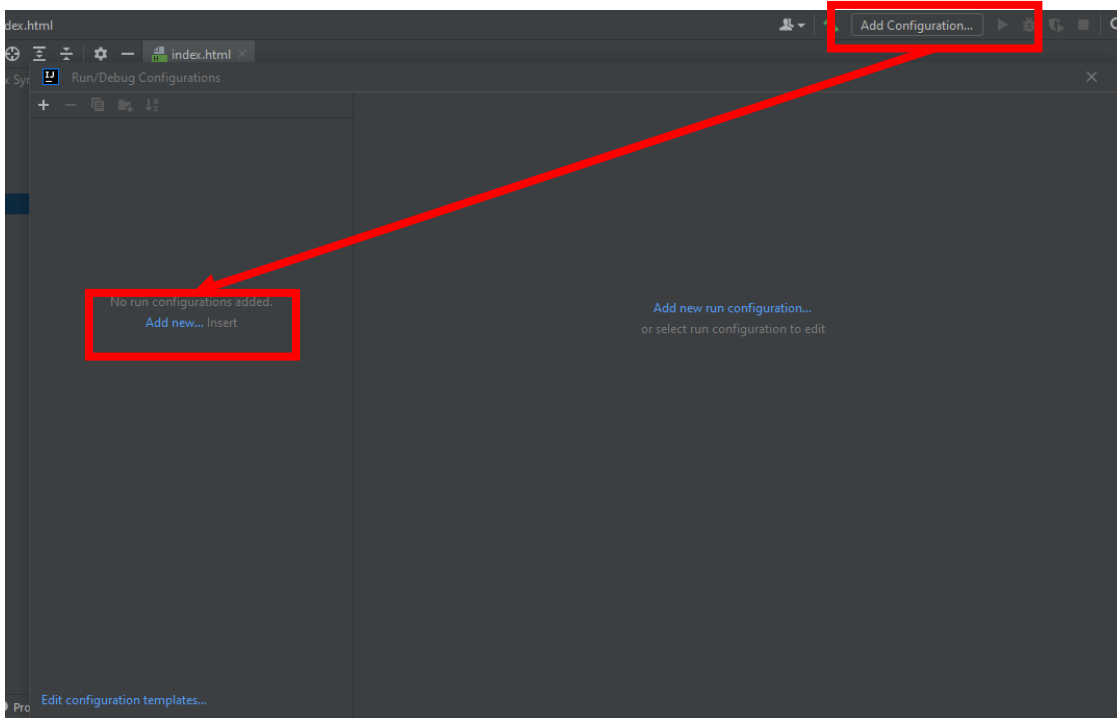
Proyecto – introducción

```
m pom.xml (webapp) x
14 <groupId>jakarta.platform</groupId>
15 <artifactId>jakarta.jakartaee-api</artifactId>
16 <version>9.1.0</version>
17 <scope>provided</scope>
18 </dependency>
19 </dependencies>
20 <properties>
21 <maven.compiler.source>18</maven.compiler.source>
22 <maven.compiler.target>18</maven.compiler.target>
23 </properties>
24 <build>
25 <plugins>
26 <plugin>
27 <groupId>org.apache.maven.plugins</groupId>
28 <artifactId>maven-compiler-plugin</artifactId>
29 <version>3.10.1</version>
30 </plugin>
31 <plugin>
32 <groupId>org.apache.tomcat.maven</groupId>
33 <artifactId>tomcat7-maven-plugin</artifactId>
34 <version>2.2</version>
35 <configuration>
36 <url>http://localhost:8080/manager/text</url>
37 <username>admin</username>
38 <password>Asdf1234$</password>
39 </configuration>
40 </plugin>
41 <plugin>
42 <groupId>org.apache.maven.plugins</groupId>
43 <artifactId>maven-war-plugin</artifactId>
44 <version>3.3.2</version>
45 </plugin>
46 </plugins>
47 </build>
48 </project>
```

```
Project
webapp C:\Users\edgjimen\Box Sync\Documents\UMa
  .idea
  src
    main
      java
      resources
      webapp
        index.html
      test
pom.xml
External Libraries
Scratches and Consoles

index.html x
1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4 <meta charset="UTF-8">
5 <title>Hola Mundo Tomcat</title>
6 </head>
7 <body>
8 <h1>Hola mundo Tomcat</h1>
9 </body>
10 </html>
```

Proyecto – introducción



Proyecto – introducción

C:\Windows\System32\cmd.exe

```
Microsoft Windows [Version 10.0.19044.1706]
(c) Microsoft Corporation. All rights reserved.

C:\Users\edgjimen\Documents\Cursos\apache-tomcat-10.0.21>cd bin

C:\Users\edgjimen\Documents\Cursos\apache-tomcat-10.0.21\bin>startup.bat
```

Tomcat

```
05-Jun-2022 19:16:05.660 INFO [main] org.apache.catalina.startup.Catalina.load Server initialization in [465] milliseconds
05-Jun-2022 19:16:05.703 INFO [main] org.apache.catalina.core.StandardService.startInternal Starting service [Catalina]
05-Jun-2022 19:16:05.704 INFO [main] org.apache.catalina.core.StandardEngine.startInternal Starting Servlet engine: [Apache Tomcat/10.0.21]
05-Jun-2022 19:16:05.715 INFO [main] org.apache.catalina.startup.HostConfig.deployDirectory Deploying web application directory [C:\Users\edgjimen\Documents\Cursos\apache-tomcat-10.0.21\webapps\docs]
05-Jun-2022 19:16:05.988 INFO [main] org.apache.catalina.startup.HostConfig.deployDirectory Deployment of web application to directory [C:\Users\edgjimen\Documents\Cursos\apache-tomcat-10.0.21\webapps\docs] has finished in [272] ms
05-Jun-2022 19:16:05.989 INFO [main] org.apache.catalina.startup.HostConfig.deployDirectory Deploying web application directory [C:\Users\edgjimen\Documents\Cursos\apache-tomcat-10.0.21\webapps\examples]
05-Jun-2022 19:16:06.441 INFO [main] org.apache.catalina.startup.HostConfig.deployDirectory Deployment of web application to directory [C:\Users\edgjimen\Documents\Cursos\apache-tomcat-10.0.21\webapps\examples] has finished in [452] ms
05-Jun-2022 19:16:06.442 INFO [main] org.apache.catalina.startup.HostConfig.deployDirectory Deploying web application directory [C:\Users\edgjimen\Documents\Cursos\apache-tomcat-10.0.21\webapps\host-manager]
05-Jun-2022 19:16:06.492 INFO [main] org.apache.catalina.startup.HostConfig.deployDirectory Deployment of web application to directory [C:\Users\edgjimen\Documents\Cursos\apache-tomcat-10.0.21\webapps\host-manager] has finished in [49] ms
05-Jun-2022 19:16:06.492 INFO [main] org.apache.catalina.startup.HostConfig.deployDirectory Deploying web application directory [C:\Users\edgjimen\Documents\Cursos\apache-tomcat-10.0.21\webapps\manager]
05-Jun-2022 19:16:06.532 INFO [main] org.apache.catalina.startup.HostConfig.deployDirectory Deployment of web application to directory [C:\Users\edgjimen\Documents\Cursos\apache-tomcat-10.0.21\webapps\manager] has finished in [40] ms
05-Jun-2022 19:16:06.533 INFO [main] org.apache.catalina.startup.HostConfig.deployDirectory Deploying web application directory [C:\Users\edgjimen\Documents\Cursos\apache-tomcat-10.0.21\webapps\ROOT]
05-Jun-2022 19:16:06.557 INFO [main] org.apache.catalina.startup.HostConfig.deployDirectory Deployment of web application to directory [C:\Users\edgjimen\Documents\Cursos\apache-tomcat-10.0.21\webapps\ROOT] has finished in [25] ms
05-Jun-2022 19:16:06.561 INFO [main] org.apache.coyote.AbstractProtocol.start Starting Protocol handler ["http-nio-8080"]
05-Jun-2022 19:16:06.633 INFO [main] org.apache.catalina.startup.Catalina.start Server startup in [971] milliseconds
```

The screenshot shows an IDE with a Maven project configuration and its execution output. The top part of the IDE displays the `pom.xml` file for a web application. The configuration includes a `<url>` tag pointing to `http://localhost:8080/manager/text`, a `<username>` tag with the value `admin`, and a `<password>` tag with the value `Asdf1234$`. The `<plugins>` section includes the `maven-war-plugin` with version `3.3.2`. The bottom part of the IDE shows the output of the `Run` action, which is `tomcat`. The output log shows the deployment of the war file to `http://localhost:8080/webapp` and the upload of the war file to `http://localhost:8080/manager/text/deploy?path=%2Fwebapp&update=true`. The output also shows the status code `200` and the reason phrase `OK`.

```
<url>http://localhost:8080/manager/text</url>
<username>admin</username>
<password>Asdf1234$</password>
</configuration>
</plugin>
<plugin>
<groupId>org.apache.maven.plugins</groupId>
<artifactId>maven-war-plugin</artifactId>
<version>3.3.2</version>
</plugin>
</plugins>
</build>
</project>
```

```
[INFO] Deploying war to http://localhost:8080/webapp
Uploading: http://localhost:8080/manager/text/deploy?path=%2Fwebapp&update=true
Uploaded: http://localhost:8080/manager/text/deploy?path=%2Fwebapp&update=true (2 KB at 1757.8 KB/sec)
[INFO] tomcatManager status code:200, ReasonPhrase:
[INFO] OK - Deployed application at context path [/webapp]
```

Proyecto – introducción

localhost:8080/webapp/

Hola mundo Tomcat

his PC > Documents > Cursos > apache-tomcat-10.0.21 > webapps

Name	Date modified	Type	Size
docs	6/5/2022 6:42 PM	File folder	
examples	6/5/2022 6:42 PM	File folder	
host-manager	6/5/2022 6:42 PM	File folder	
manager	6/5/2022 6:42 PM	File folder	
ROOT	6/5/2022 6:42 PM	File folder	
webapp	6/5/2022 7:25 PM	File folder	
webapp.war	6/5/2022 7:25 PM	WAR File	2 KB

localhost:8080/manager/html

Tomcat web Application manager

Message: OK

Manager					
List Applications	HTML Manager Help	Manager Help	Server Status		
Applications					
Path	Version	Display Name	Running	Sessions	Commands
/	None specified	Welcome to Tomcat	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/docs	None specified	Tomcat Documentation	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/examples	None specified	Servlet and JSP Examples	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/host-manager	None specified	Tomcat Host Manager Application	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/manager	None specified	Tomcat Manager Application	true	1	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/webapp	None specified		true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes

Deploy

Deploy directory or WAR file located on server

Context Path:

Version (for parallel deployment):

XML Configuration file path:

WAR or Directory path:

Deploy

WAR file to deploy

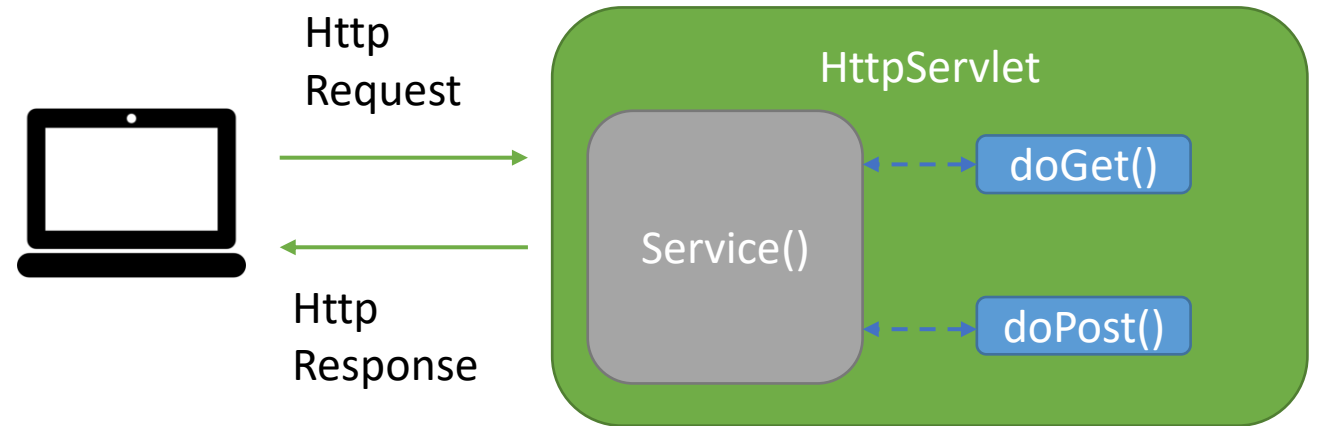
Select WAR file to upload Choose File No file chosen

Deploy

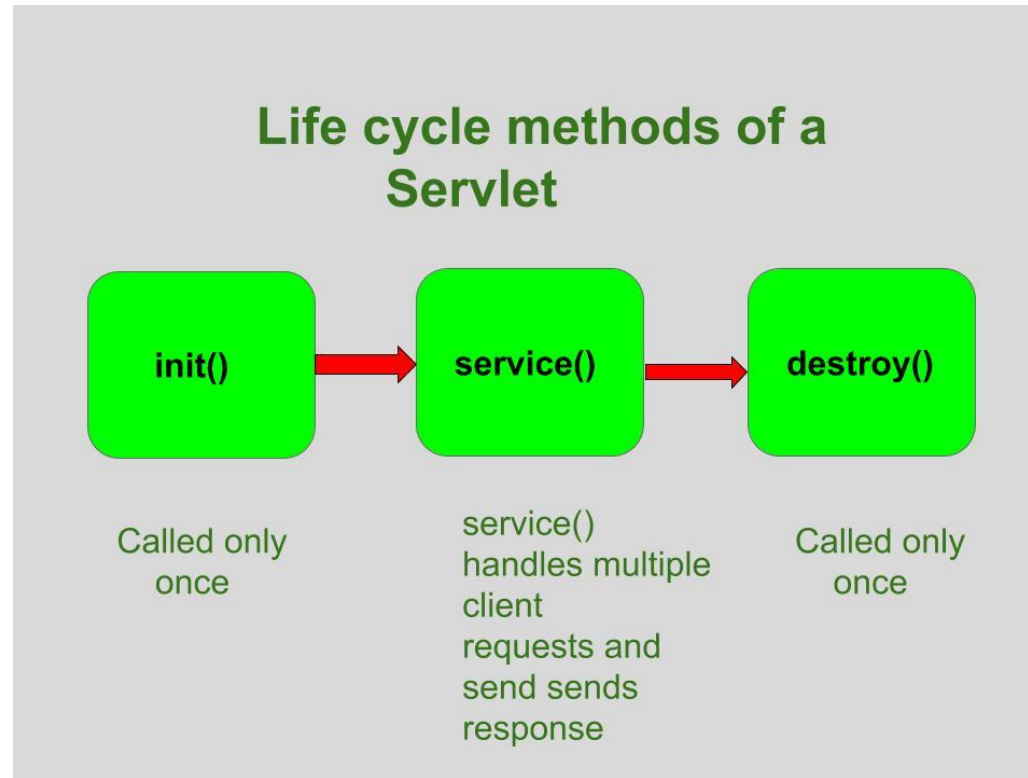
API- Servlet

Métodos HTTP soportados:

- doDelete
- doGet
- doHead
- doOptions
- doPost
- doPut
- doTrace

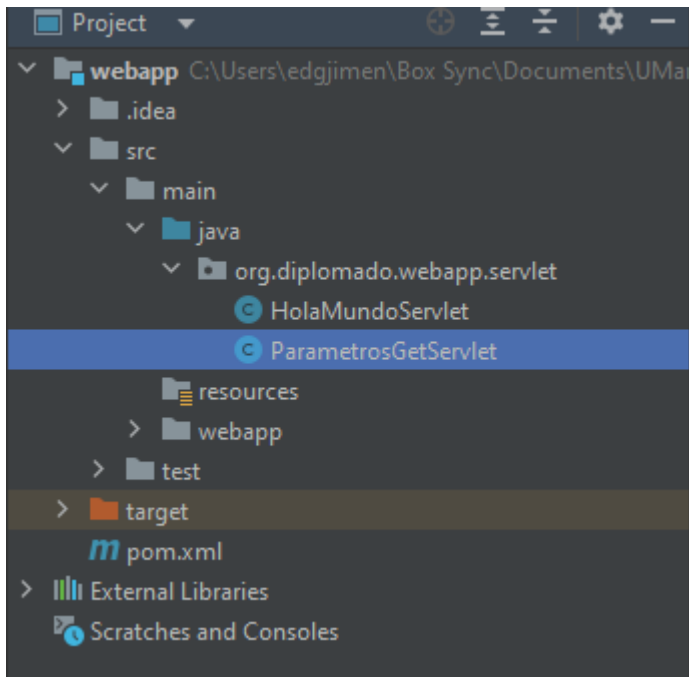


API- Servlet



<https://www.geeksforgeeks.org/life-cycle-of-a-servlet/>

API- Servlet



```
HolaMundoServlet.java
1 package org.diplomado.webapp.servlet;
2
3 import jakarta.servlet.ServletException;
4 import jakarta.servlet.annotation.WebServlet;
5 import jakarta.servlet.http.HttpServlet;
6 import jakarta.servlet.http.HttpServletRequest;
7 import jakarta.servlet.http.HttpServletResponse;
8
9 import java.io.IOException;
10 import java.io.PrintWriter;
11
12 @WebServlet("/hola-mundo")
13 public class HolaMundoServlet extends HttpServlet {
14
15     @Override
16     protected void doGet(HttpServletRequest request, HttpServletResponse response) throws
17         IOException, ServletException {
18         response.setContentType("text/html");
19         PrintWriter out = response.getWriter();
20
21         out.println("<!DOCTYPE html>");
22         out.println("<html>");
23         out.println("    <head>");
24         out.println("        <meta charset=\"UTF-8\">");
25         out.println("        <title>Hola Mundo Servlet</title>");
26         out.println("    </head>");
27         out.println("    <body>");
28         out.println("        <h1>Hola Mundo Servlet!</h1>");
29         out.println("    </body>");
30         out.println("</html>");
31         out.close();
32     }
33 }
```



API- Servlet

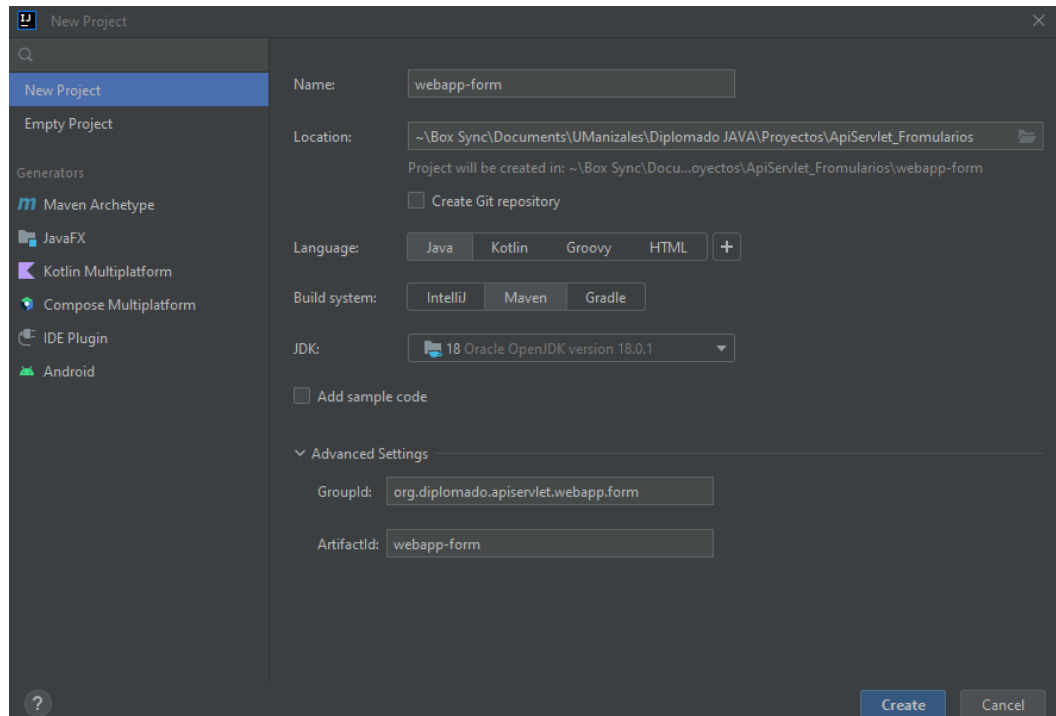
```
1 package org.diplomado.webapp.servlet;
2
3 import jakarta.servlet.ServletException;
4 import jakarta.servlet.annotation.WebServlet;
5 import jakarta.servlet.http.HttpServlet;
6 import jakarta.servlet.http.HttpServletRequest;
7 import jakarta.servlet.http.HttpServletResponse;
8
9 import java.io.IOException;
10 import java.io.PrintWriter;
11
12 @WebServlet("/parametros/url-get")
13 public class ParametrosGetServlet extends HttpServlet {
14     @Override
15     protected void doGet(HttpServletRequest req, HttpServletResponse resp) throws ServletException, IOException {
16         resp.setContentType("text/html");
17         PrintWriter out = resp.getWriter();
18
19         String saludo = req.getParameter("saludo");
20         String nombre = req.getParameter("nombre");
21
22         out.println("<!DOCTYPE html>");
23         out.println("<html>");
24         out.println("    <head>");
25         out.println("        <meta charset='UTF-8'>");
26         out.println("        <title>Parámetros Get de la url</title>");
27         out.println("    </head>");
28         out.println("    <body>");
29         out.println("        <h1>Parámetros Get de la url!</h1>");
30         if (saludo != null && nombre != null) {
31             out.println("            <h2>El saludo enviado es: " + saludo + " " + nombre + "</h2>");
32         } else if (saludo != null) {
33             out.println("            <h2>El saludo enviado es: " + saludo + "</h2>");
34         } else if (nombre != null) {
35             out.println("            <h2>Hola mi nombre es " + nombre + "</h2>");
36         } else {
37             out.println("            <h2>no se han pasado los parámetros saludos ni nombre</h2>");
38         }
39     }
40 }
```

```
39
40     try {
41         int codigo = Integer.parseInt(req.getParameter("codigo"));
42         out.println("<h3>El codigo enviado es : " + codigo + "</h3>");
43     } catch (NumberFormatException e) {
44         out.println("<h3>El codigo no se ha enviado, es null</h3>");
45     }
46     out.println("    </body>");
47     out.println("</html>");
48     out.close();
49 }
50
51 }
```


API- Servlet

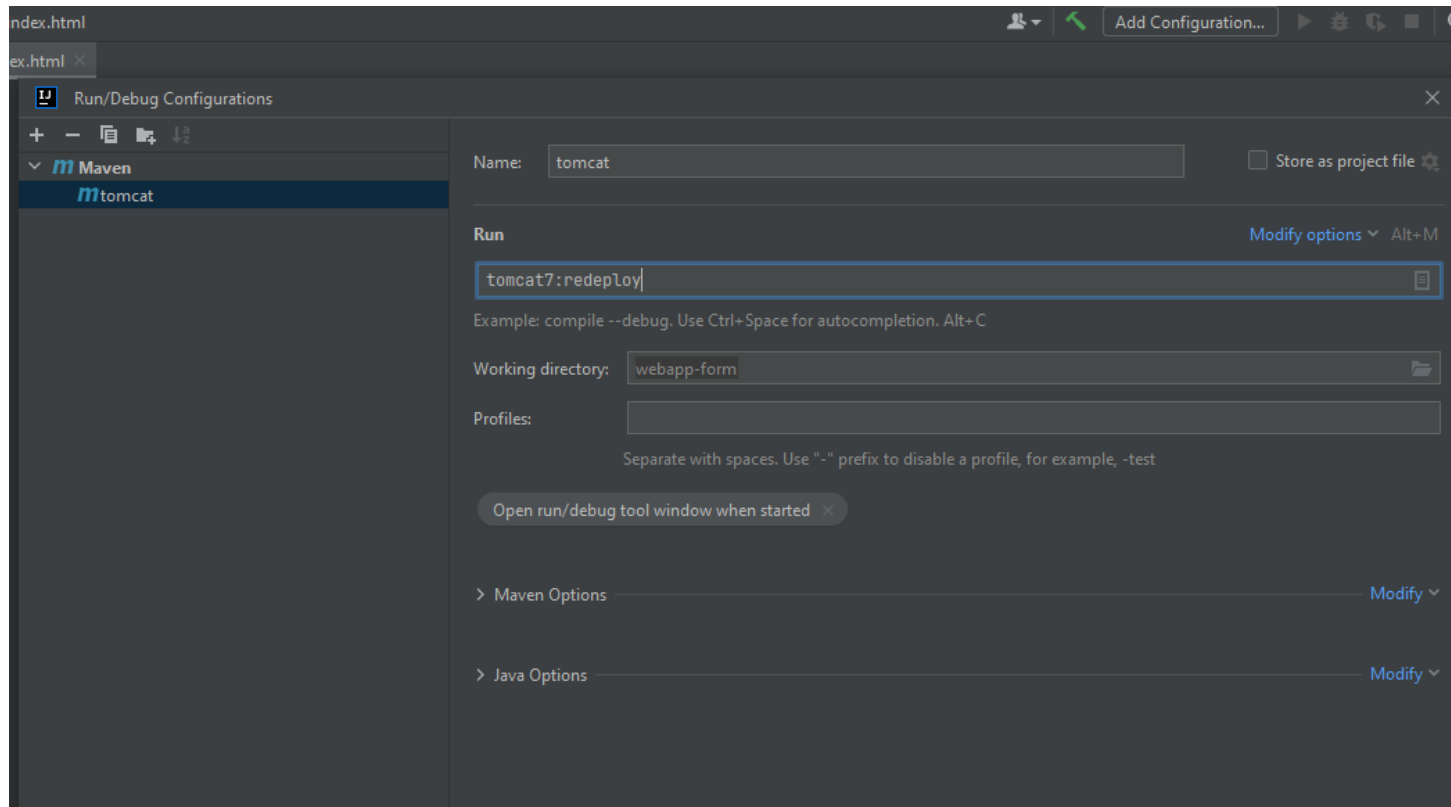
```
index.html x
1  <!DOCTYPE html>
2  <html lang="en">
3  <head>
4      <meta charset="UTF-8">
5      <title>Hola Mundo Tomcat</title>
6  </head>
7  <body>
8      <h1>Hola mundo Tomcat</h1>
9      <ul>
10         <li>
11             <a href="/webapp/parametros/url-get?saludo=Hola Andres">enviando parámetro saludo: /url-get?saludo=Hola
12                 Rafael</a>
13         </li>
14         <li>
15             <a href="/webapp/parametros/url-get?saludo=Hola&nombre=Andres&codigo=12345">/url-get?saludo=Hola
16                 &nombre=Rafael&codigo=12345</a>
17         </li>
18         <li>
19             <a href="/webapp/parametros/url-get?saludo=Hola&nombre=Andres">/url-get?saludo=Hola&nombre=Rafael</a>
20         </li>
21         <li>
22             <a href="/webapp/parametros/url-get?nombre=Andres">/url-get?nombre=Rafael</a>
23         </li>
24     </ul>
25 </body>
26 </html>
```

API- Servlet - Formularios

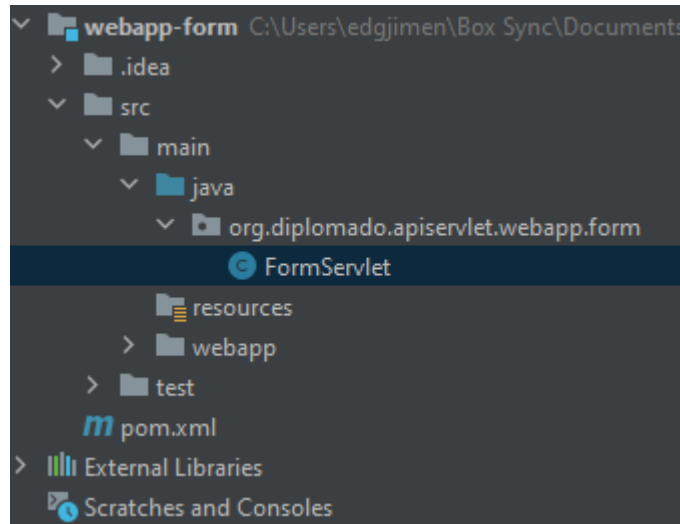


```
10 <packaging>war</packaging>
11 <properties>
12   <maven.compiler.source>18</maven.compiler.source>
13   <maven.compiler.target>18</maven.compiler.target>
14 </properties>
15 <dependencies>
16   <!-- https://mvnrepository.com/artifact/jakarta.platform/jakarta.jakartaee-api -->
17   <dependency>
18     <groupId>jakarta.platform</groupId>
19     <artifactId>jakarta.jakartaee-api</artifactId>
20     <version>9.1.0</version>
21     <scope>provided</scope>
22   </dependency>
23 </dependencies>
24 <build>
25   <finalName>${project.artifactId}</finalName>
26   <plugins>
27     <plugin>
28       <groupId>org.apache.maven.plugins</groupId>
29       <artifactId>maven-compiler-plugin</artifactId>
30       <version>3.10.1</version>
31     </plugin>
32     <plugin>
33       <groupId>org.apache.tomcat.maven</groupId>
34       <artifactId>tomcat7-maven-plugin</artifactId>
35       <version>2.2</version>
36       <configuration>
37         <url>http://localhost:8080/manager/text</url>
38         <username>admin</username>
39         <password>Asdf1234$</password>
40       </configuration>
41     </plugin>
42     <plugin>
43       <groupId>org.apache.maven.plugins</groupId>
44       <artifactId>maven-war-plugin</artifactId>
45       <version>3.3.2</version>
46     </plugin>
47   </plugins>
48 </build>
49 </project>
```

API- Servlet - Formularios



API- Servlet - Formularios



```
FormServlet.java
1 package org.diplomado.apiservlet.webapp.form;
2
3 import jakarta.servlet.ServletException;
4 import jakarta.servlet.annotation.WebServlet;
5 import jakarta.servlet.http.HttpServlet;
6 import jakarta.servlet.http.HttpServletRequest;
7 import jakarta.servlet.http.HttpServletResponse;
8
9 import java.io.IOException;
10 import java.io.PrintWriter;
11 import java.util.*;
12
13 @WebServlet("/registro")
14 public class FormServlet extends HttpServlet {
15     @Override
16     protected void doPost(HttpServletRequest req, HttpServletResponse resp) throws ServletException, IOException {
17         resp.setContentType("text/html");
18
19         String username = req.getParameter("username");
20         String password = req.getParameter("password");
21         String email = req.getParameter("email");
22         String pais = req.getParameter("pais");
23         String[] lenguajes = req.getParameterValues("lenguajes");
24         String[] roles = req.getParameterValues("roles");
25
26         String idioma = req.getParameter("idioma");
27         boolean habilitar = req.getParameter("habilitar") != null &&
28             req.getParameter("habilitar").equals("on");
29         String secreto = req.getParameter("secreto");
30
31         Map<String, String> errores = new HashMap<>();
32
33         if (username == null || username.isBlank()) {
34             errores.put("username", "el username es requerido!");
35         }
36
37         if (password == null || password.isBlank()) {
38             errores.put("password", "el password no puede ser vacio!");
39         }
40     }
}
```

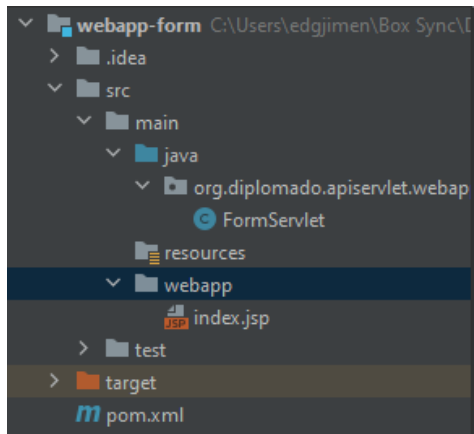
API- Servlet - Formularios

```
FormServlet.java
39 }
40
41 if (email == null || !email.contains("@")) {
42     errores.put("email", "el email es requerido y debe tener un formato de correo.");
43 }
44 if (pais == null || pais.equals("") || pais.equals(" ")) {
45     errores.put("pais", "el pais es requerido!");
46 }
47
48 if (lenguajes == null || lenguajes.length == 0) {
49     errores.put("lenguajes", "debe seleccionar al menos un tema.");
50 }
51 if (roles == null || roles.length == 0) {
52     errores.put("roles", "debe seleccionar al menos un role!");
53 }
54 if (idioma == null) {
55     errores.put("idioma", "debe seleccionar un idioma!");
56 }
57 if (errores.isEmpty()) {
58     try (PrintWriter out = resp.getWriter()) {
59
60         out.println("<!DOCTYPE html>");
61         out.println("<html>");
62         out.println("    <head>");
63         out.println("        <meta charset='UTF-8'>");
64         out.println("        <title>Resultado form</title>");
65         out.println("    </head>");
66         out.println("    <body>");
67         out.println("        <h1>Resultado form!</h1>");
68
69         out.println("        <ul>");
70         out.println("            <li>Username: " + username + "</li>");
71         out.println("            <li>Password: " + password + "</li>");
72         out.println("            <li>Email: " + email + "</li>");
73         out.println("            <li>País: " + pais + "</li>");
74         out.println("            <li>Lenguajes: <ul>");
75         Arrays.asList(lenguajes).forEach(lenguaje -> {
76             out.println("                <li>" + lenguaje + "</li>");
77             });
78         out.println("            </ul></li>");
79
```

```
79
80         out.println("                <li>Roles: <ul>");
81         Arrays.asList(roles).forEach(role -> {
82             out.println("                    <li>" + role + "</li>");
83             });
84         out.println("                </ul></li>");
85         out.println("            <li>Idioma: " + idioma + "</li>");
86         out.println("            <li>Habilitado: " + habilitar + "</li>");
87         out.println("            <li>Secreto: " + secreto + "</li>");
88         out.println("        </ul>");
89         out.println("    </body>");
90         out.println("</html>");
91     }
92 } else {
93     /*errores.forEach(error -> {
94         out.println("<li>" + error + "</li>");
95     });
96     out.println("<p><a href='/webapp-form/index.jsp'>volver</a></p>");
97     req.setAttribute("errores", errores);
98     getServletContext().getRequestDispatcher("/index.jsp").forward(req, resp);
99 }
100
101 }
102
```

API- Servlet - Formularios

<https://getbootstrap.com/docs/5.2/getting-started/introduction/#quick-start>



```
1  <%@page contentType="text/html" pageEncoding="UTF-8"%>
2  <%@page import="java.util.Map"%>
3  <%
4  Map<String, String> errores = (Map<String, String>)request.getAttribute("errores");
5  %>
6  <!DOCTYPE html>
7  <html lang="en">
8  <head>
9      <meta charset="UTF-8">
10     <title>Formulario de usuarios</title>
11     <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.2.0-beta1/dist/css/bootstrap.min.css" rel="stylesheet" integrity="sha384-0evHe/X+R7YkIZDRvuzKMRqM+Or"
12 </head>
13 <body>
14 <h3>Formulario de usuarios</h3>
15
16 <%
17 if(errores != null && errores.size()>0){
18 %>
19 <ul class="alert alert-danger mx-5 px-5">
20 <% for(String error: errores.values()){>
21 <li><%=error%></li>
22 <%}>
23 </ul>
24 <%}>
25 <div class="px-5">
26 <form action="/webapp-form/registro" method="post">
27
28 <div class="row mb-3">
29 <label for="username" class="col-form-label col-sm-2">Usuario</label>
30 <div class="col-sm-4">
31 <input type="text" name="username" id="username" class="form-control" value="${param.username}">
32 </div>
33
34 </div>
35 <%
36 if(errores != null && errores.containsKey("username")){
37     out.println("<div class='row mb-3 alert alert-danger col-sm-4' style='color: red;'>" + errores.get("username") + "</div>");
38 }
39 %>
```

API- Servlet - Formularios

```
index.jsp x
40 <div class="row mb-3">
41   <label for="password" class="col-form-label col-sm-2">Password</label>
42   <div class="col-sm-4"><input type="password" name="password" id="password" class="form-control"></div>
43 <%
44   if(errores != null && errores.containsKey("password")){
45     out.println("<small class='alert alert-danger col-sm-4' style='color: red;'>" + errores.get("password") + "</small>");
46   }
47   %>
48 </div>
49 <div class="row mb-3">
50   <label for="email" class="col-form-label col-sm-2">Email</label>
51   <div class="col-sm-4"><input type="text" name="email" id="email" class="form-control" value="${param.email}"></div>
52 <%
53   if(errores != null && errores.containsKey("email")){
54     out.println("<small class='alert alert-danger col-sm-4' style='color: red;'>" + errores.get("email") + "</small>");
55   }
56   %>
57 </div>
58 <div class="row mb-3">
59   <label for="pais" class="col-form-label col-sm-2">País</label>
60   <div class="col-sm-4">
61     <select name="pais" id="pais" class="form-select">
62       <option value=""-- seleccionar --</option>
63       <option value="ES" ${param.pais.equals("ES")} "selected": "">España</option>
64       <option value="MX" ${param.pais.equals("MX")} "selected": "">México</option>
65       <option value="CL" ${param.pais.equals("CL")} "selected": "">Chile</option>
66       <option value="AR" ${param.pais.equals("AR")} "selected": "">Argentina</option>
67       <option value="PE" ${param.pais.equals("PE")} "selected": "">Perú</option>
68       <option value="CO" ${param.pais.equals("CO")} "selected": "">Colombia</option>
69       <option value="VE" ${param.pais.equals("VE")} "selected": "">Venezuela</option>
70     </select>
71   </div>
72 <%
73   if(errores != null && errores.containsKey("pais")){
74     out.println("<small class='alert alert-danger col-sm-4' style='color: red;'>" + errores.get("pais") + "</small>");
75   }
76   %>
77 </div>
78
```

```
index.jsp x
79 <div class="row mb-3">
80   <label for="lenguajes" class="col-form-label col-sm-2">Lenguajes de programación</label>
81   <div class="col-sm-4">
82     <select name="lenguajes" id="lenguajes" multiple class="form-select">
83       <option value="java" ${paramValues.lenguajes.stream().anyMatch(v->v.equals("java")).get()}?"selected":"">Java SE</option>
84       <option value="jakartaee" ${paramValues.lenguajes.stream().anyMatch(v->v.equals("jakartaee")).get()}?"selected":"">Jakarta EE9</option>
85       <option value="spring" ${paramValues.lenguajes.stream().anyMatch(v->v.equals("spring")).get()}?"selected":"">Spring Boot</option>
86       <option value="js" ${paramValues.lenguajes.stream().anyMatch(v->v.equals("js")).get()}?"selected":"">JavaScript</option>
87       <option value="angular" ${paramValues.lenguajes.stream().anyMatch(v->v.equals("angular")).get()}?"selected":"">Angular</option>
88       <option value="react" ${paramValues.lenguajes.stream().anyMatch(v->v.equals("react")).get()}?"selected":"">React</option>
89     </select>
90   </div>
91 <%
92   if(errores != null && errores.containsKey("lenguajes")){
93     out.println("<small class='alert alert-danger col-sm-4' style='color: red;'>" + errores.get("lenguajes") + "</small>");
94   }
95   %>
96 </div>
97
98 <div class="row mb-3">
99   <label class="col-form-label col-sm-2">Roles</label>
100   <div class="form-check col-sm-2">
101     <input type="checkbox" name="roles" value="ROLE_ADMIN"
102       ${paramValues.roles.stream().anyMatch(v->v.equals("ROLE_ADMIN")).get()}?"checked":""
103     class="form-check-input">
104     <label class="form-check-label">Administrador</label>
105   </div>
106   <div class="form-check col-sm-2">
107     <input type="checkbox" name="roles" value="ROLE_USER" class="form-check-input"
108       ${paramValues.roles.stream().anyMatch(v->v.equals("ROLE_USER")).get()}?"checked":"">
109     <label class="form-check-label">Usuario</label>
110   </div>
111   <div class="form-check col-sm-2">
112     <input type="checkbox" name="roles" value="ROLE_MODERATOR" class="form-check-input"
113       ${paramValues.roles.stream().anyMatch(v->v.equals("ROLE_MODERATOR")).get()}?"checked":"">
114     <label class="form-check-label">Moderador</label>
115   </div>

```

API- Servlet - Formularios

```
index.jsp
documents\UManizales\Diplomado JAVA\Proyectos\ApiServlet_Formularios\webapp-form

116     <%
117         if(errores != null && errores.containsKey("roles")){
118             out.println("<small class='alert alert-danger col-sm-4' style='color: red;'>" + errores.get("roles") + "</small>");
119         }
120     %>
121 </div>
122 <div class="row mb-3">
123     <label class="col-form-label col-sm-2">Idiomas</label>
124     <div class="form-check col-sm-2">
125         <input type="radio" name="idioma" value="es" class="form-check-input" ${param.idioma.equals("es")}? "checked": "">
126         <label class="form-check-label">Español</label>
127     </div>
128     <div class="form-check col-sm-2">
129         <input type="radio" name="idioma" value="en" class="form-check-input" ${param.idioma.equals("en")}? "checked": "">
130         <label class="form-check-label">Inglés</label>
131     </div>
132     <div class="form-check col-sm-2">
133         <input type="radio" name="idioma" value="fr" class="form-check-input" ${param.idioma.equals("fr")}? "checked": "">
134         <label class="form-check-label">Frances</label>
135     </div>
136     <%
137         if(errores != null && errores.containsKey("idioma")){
138             out.println("<small class='alert alert-danger col-sm-4' style='color: red;'>" + errores.get("idioma") + "</small>");
139         }
140     %>
141 </div>
142 <div class="row mb-3">
143     <label for="habilitar" class="col-form-label col-sm-2">Habilitar</label>
144     <div class="form-check col-sm-2">
145         <input type="checkbox" name="habilitar" id="habilitar" checked class="form-check-input">
146     </div>
147 </div>
148 <div class="row mb-3">
149     <div>
150         <input type="submit" value="Enviar" class="btn btn-primary">
151     </div>
152 </div>
153 <input type="hidden" name="secreto" value="12345">
154 </form>
155 </div>
```


API- Servlet - Formularios

localhost:8080/webapp-form/registro

Formulario de usuarios

- el password no puede ser vacío!
- debe seleccionar al menos un rol!
- debe seleccionar un idioma!
- el email es requerido y debe tener un formato de correo.
- debe seleccionar al menos un tema.
- el username es requerido!
- el país es requerido!

Usuario

el username es requerido!

Password

el password no puede ser vacío!

Email

el email es requerido y debe tener un formato de correo.

País

el país es requerido!

Lenguajes de programación

debe seleccionar al menos un tema.

Roles ☐ Administrador ☐ Usuario ☐ Moderador

debe seleccionar al menos un rol!

Idiomas ☐ Español ☐ Inglés ☐ Francés

debe seleccionar un idioma!

Habilitar ☒

Enviar

localhost:8080/webapp-form/registro

Resultado form!

- Username: test
- Password: test
- Email: test@test.com
- País: MX
- Lenguajes:
 - jakartaee
 - js
 - angular
- Roles:
 - ROLE_ADMIN
- Idioma: es
- Habilitado: true
- Secreto: 12345