Ministère de l'Enseignement Supérieur et de la Recherche Scientifique
Université de Jijel
Faculté des Sciences exactes et de l'informatique
Département d'informatique

– Module –
Environnements et Programmation Dédiés

Master 1 : IA

Enseignant du module : Dr. Hemza FICEL

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TP REST API

Tools

Eclipse IDE : an integrated development environment**.**

Apache Maven : an open source build tool for project management that automates Java projects.

Eclipse Jersey : an open source framework for developing RESTful Web Services in Java.

Apache Tomcat : an open source application server.

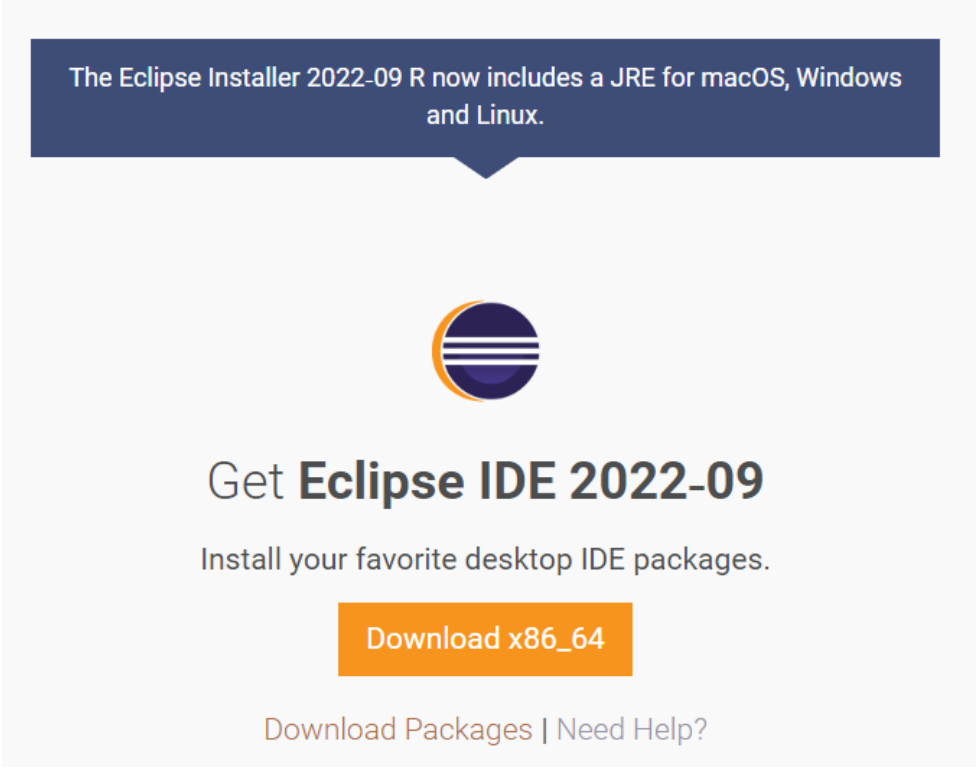
Postman : an application for testing APIs;

Part 1

Tools

IDE Eclipse

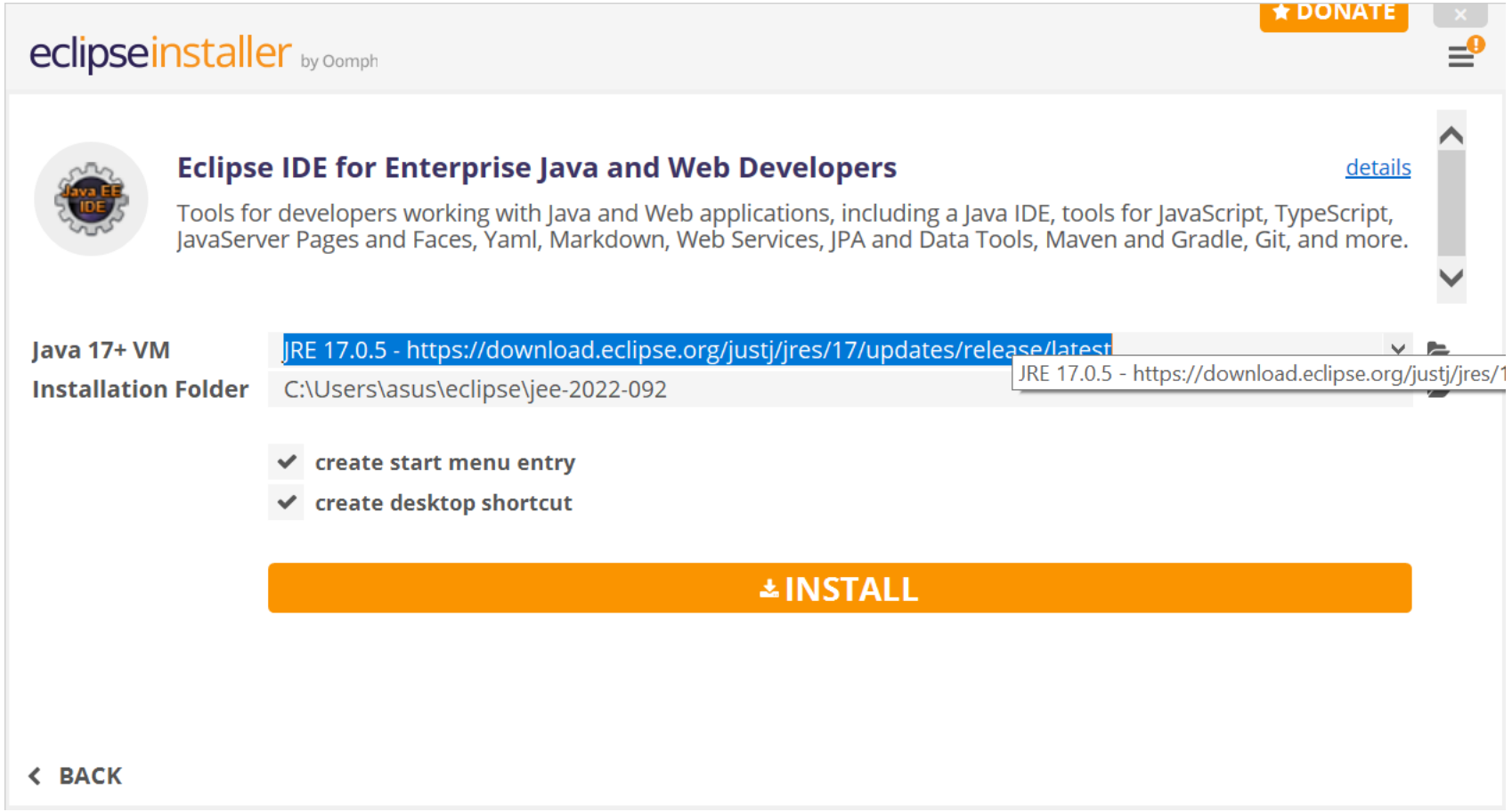
https://www.eclipse.org/downloads/



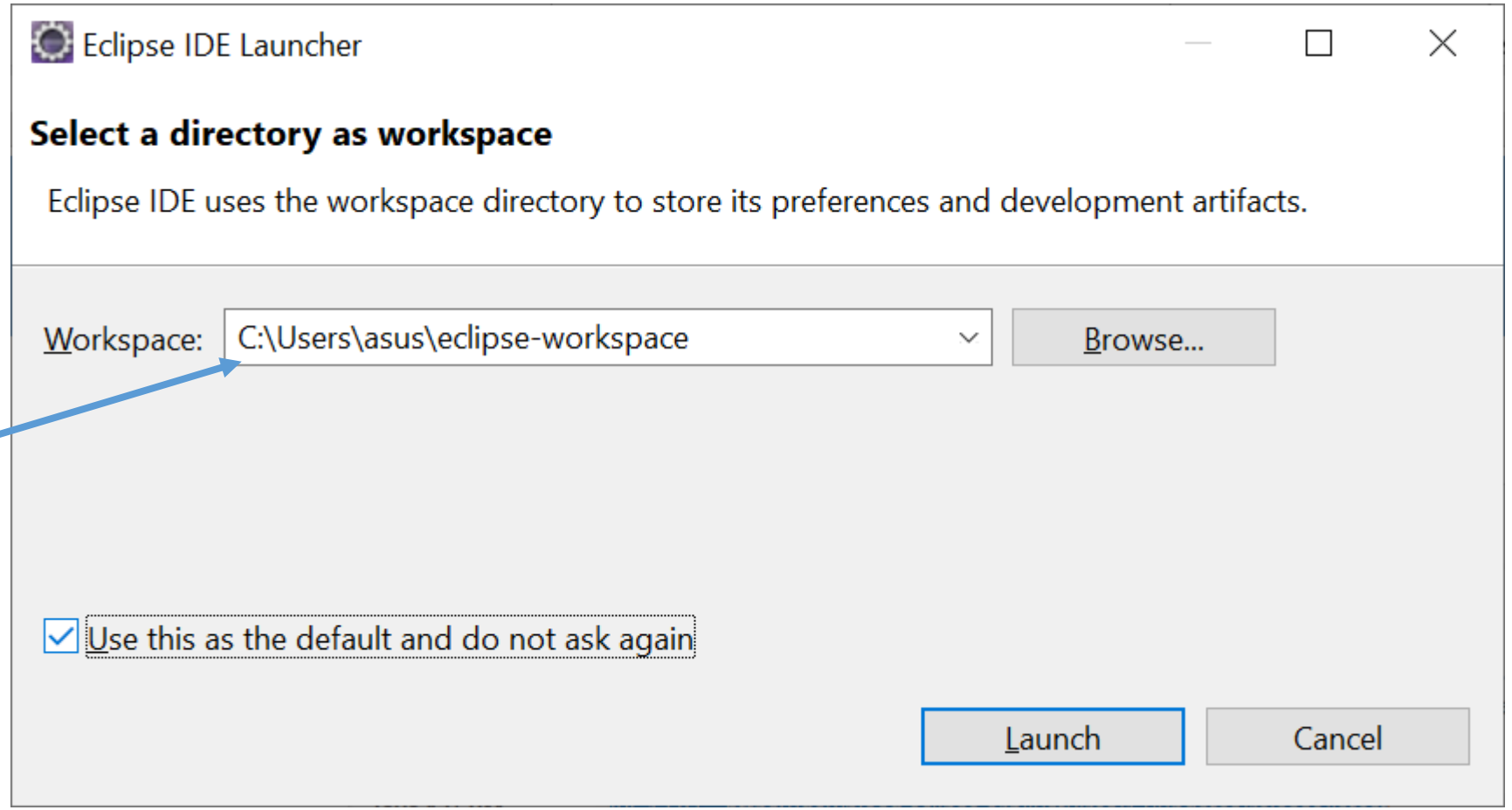
Tools


Eclipse IDE for Enterprise Java and Web Developers
eclipseinstaller by Oomph
DONATE
type filter text
Eclipse IDE for Java Developers
The essential tools for any Java developer, including a Java IDE, a Git client, XML Editor, Maven and Gradle integration
Eclipse IDE for Enterprise Java and Web Developers
Tools for developers working with Java and Web applications, including a Java IDE, tools for JavaScript, TypeScript, JavaServer Pages and Faces, Yaml, Markdown, Web Services, JPA and Data Tools, Maven and Gradle, Git, and more.
Eclipse IDE for C/C++ Developers
An IDE for C/C++ developers.
Eclipse IDE for Embedded C/C++ Developers
An IDE for Embedded C/C++ developers. It includes managed cross build plug-ins (Arm and RISC-V) and debug plug-ins (SEGGER J-Link, OpenOCD, pyocd, and QEMU), plus a number of templates to create ready to run blinky projects.

Tools

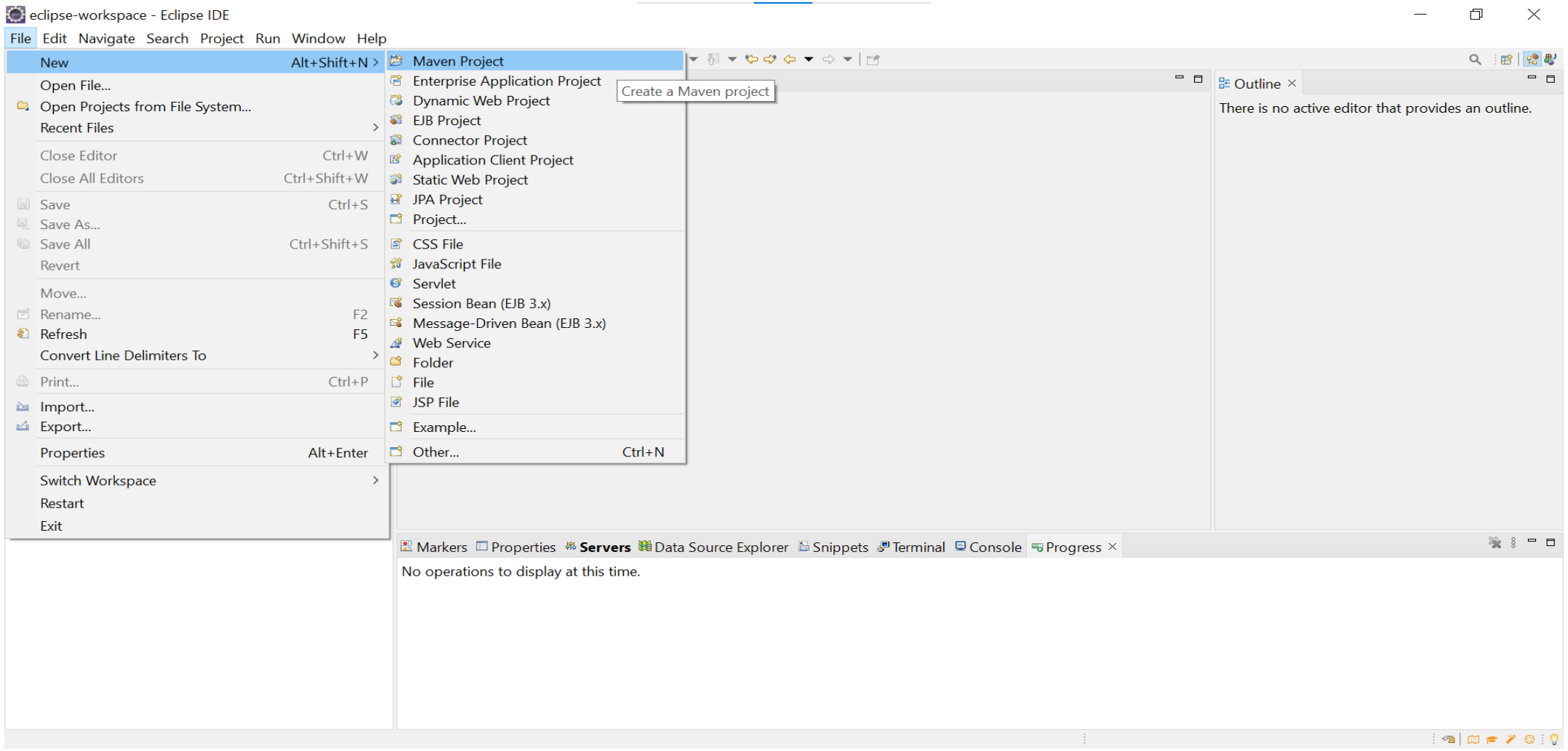

eclipseinstaller by Oomph
DONATE
Eclipse IDE for Enterprise Java and Web Developers
details
Tools for developers working with Java and Web applications, including a Java IDE, tools for JavaScript, TypeScript, JavaServer Pages and Faces, Yaml, Markdown, Web Services, JPA and Data Tools, Maven and Gradle, Git, and more.
Java 17+ VM
JRE 17.0.5 - https://download.eclipse.org/justj/jres/17/updates/release/latest
Installation Folder
C:\Users\asus\eclipse\jee-2022-092
create start menu entry
create desktop shortcut
INSTALL
BACK

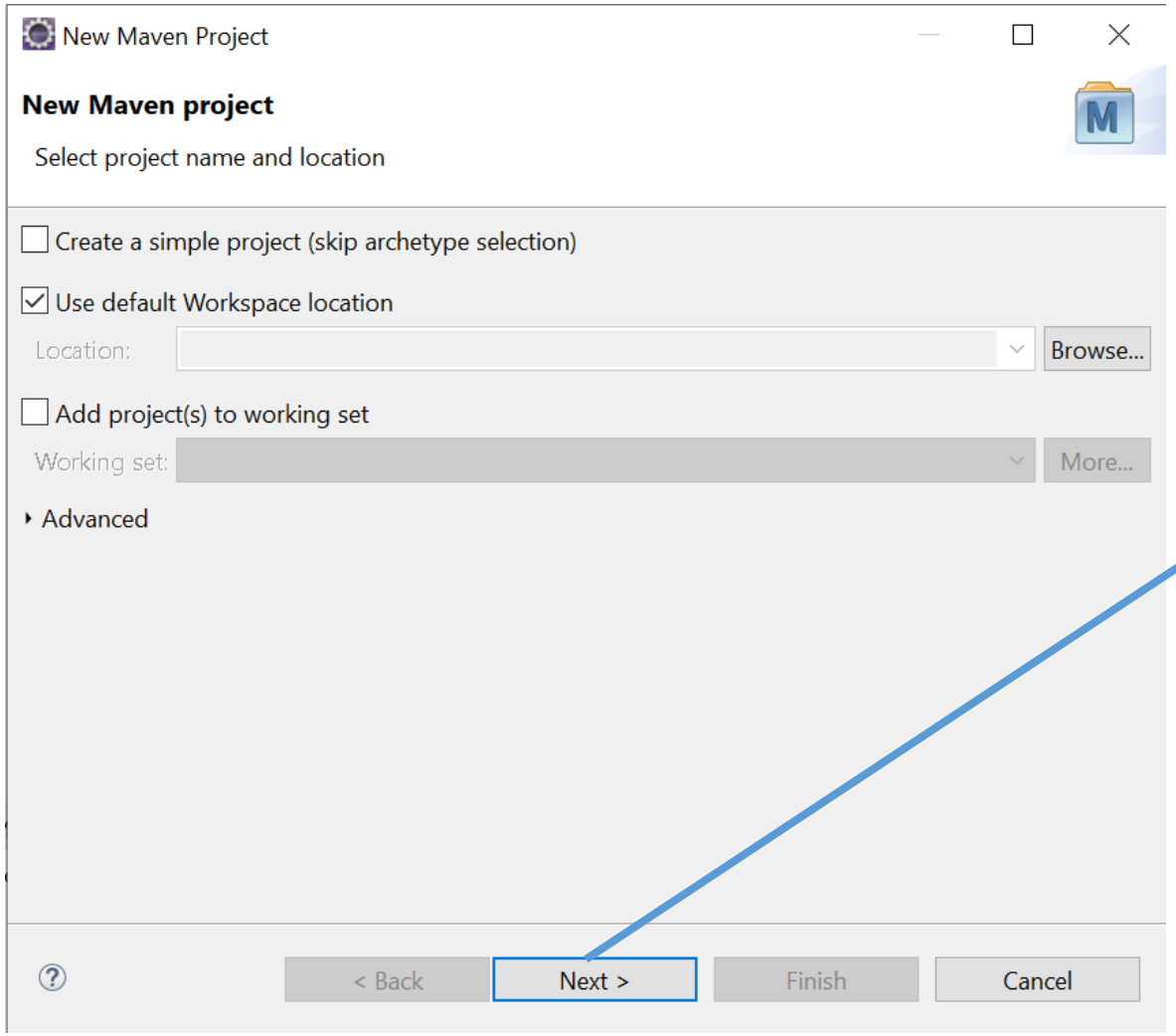
Launch the application

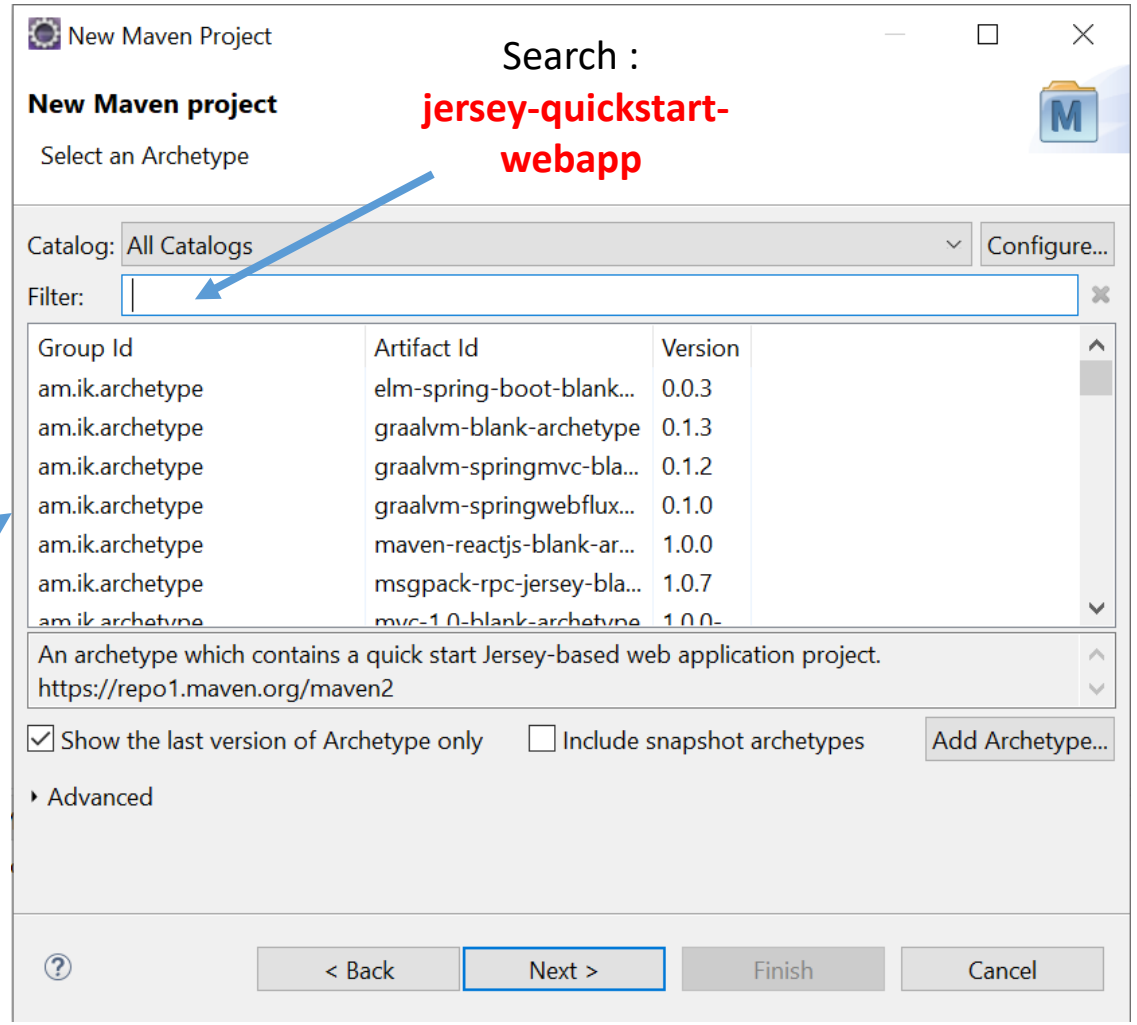


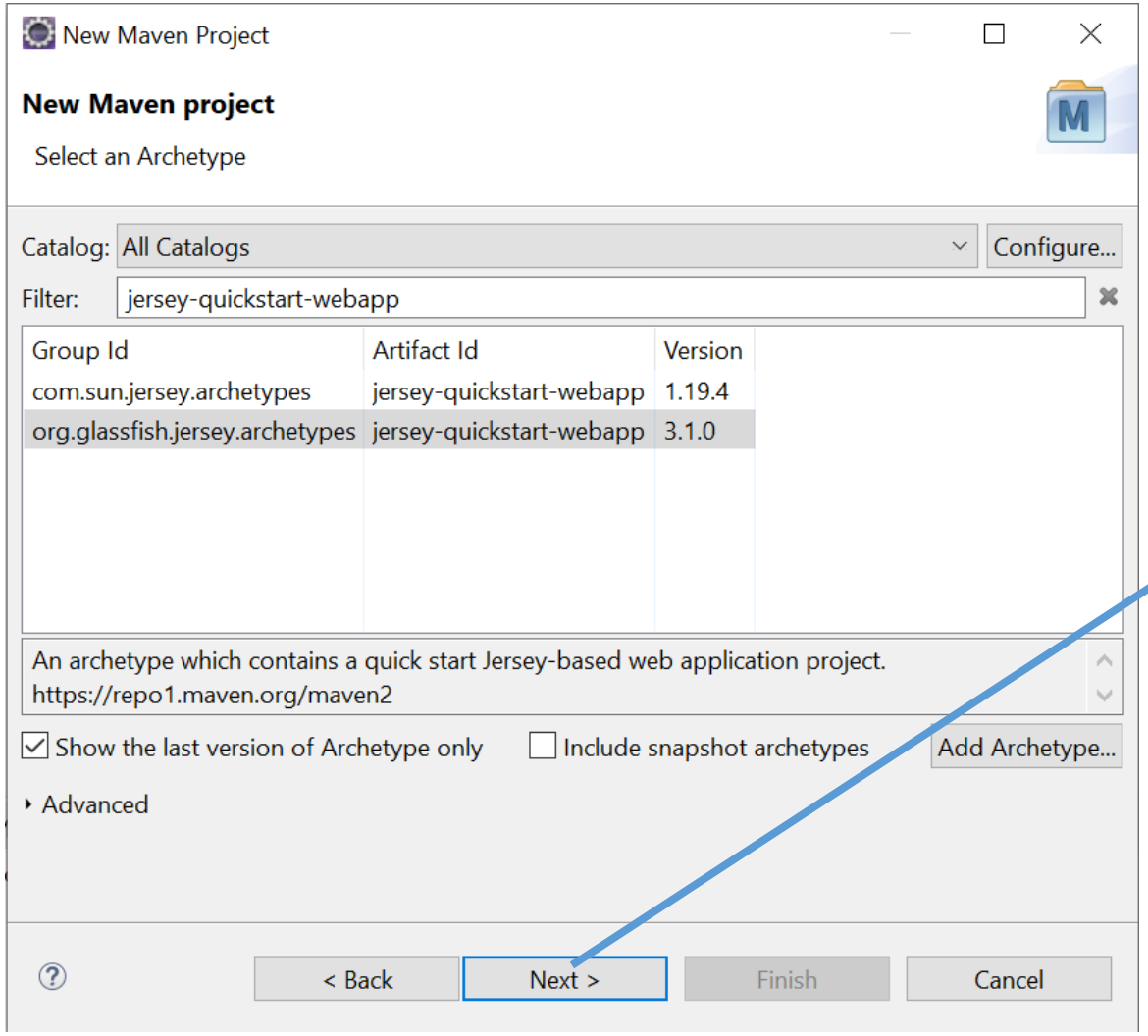
Folder to store your projects

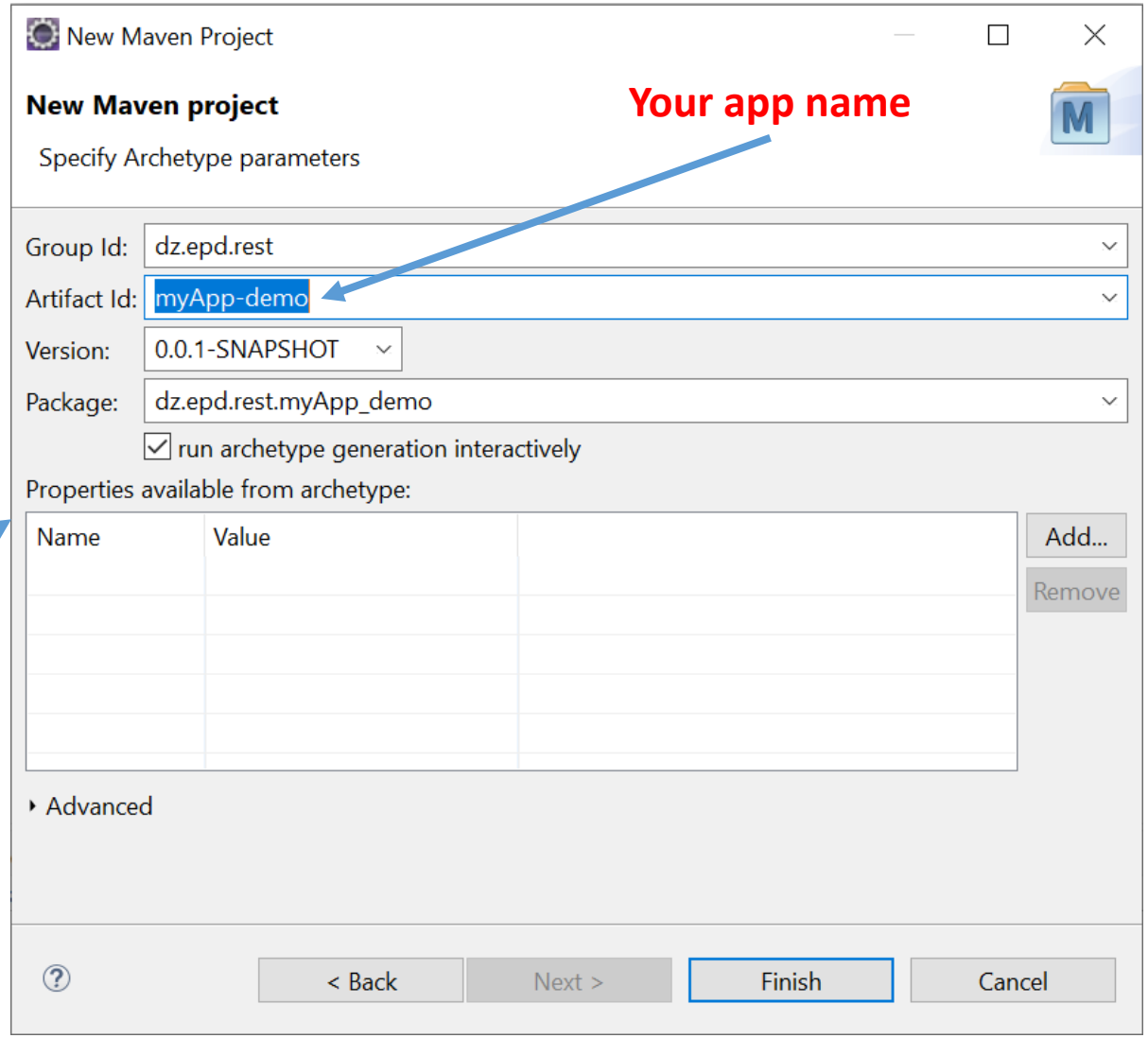
Let's create a simple REST web service

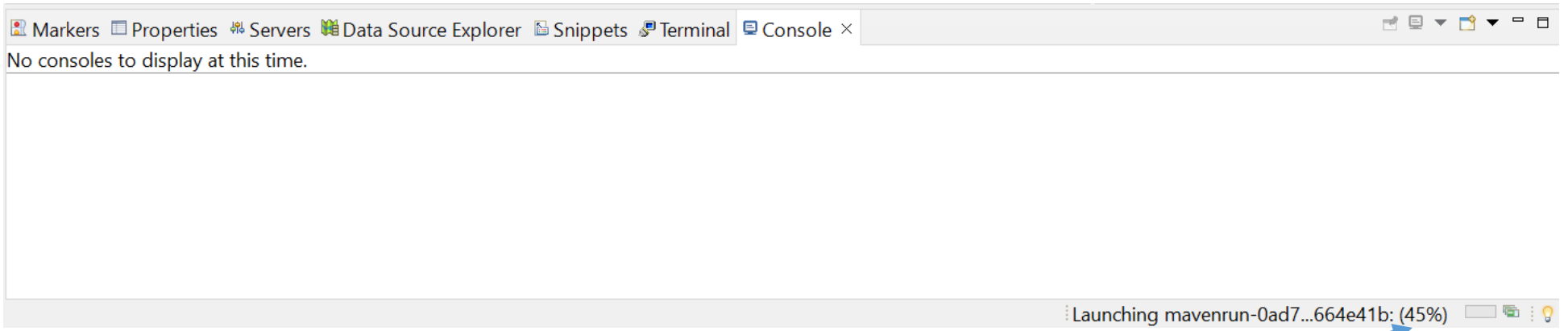

eclipse-workspace - Eclipse IDE
File Edit Navigate Search Project Run Window Help
New Alt+Shift+N
Open File...
Open Projects from File System...
Recent Files
Close Editor Ctrl+W
Close All Editors Ctrl+Shift+W
Save Ctrl+S
Save As...
Save All Ctrl+Shift+S
Revert
Move...
Rename... F2
Refresh F5
Convert Line Delimiters To
Print... Ctrl+P
Import...
Export...
Properties Alt+Enter
Switch Workspace
Restart
Exit
Maven Project
Enterprise Application Project
Dynamic Web Project
EJB Project
Connector Project
Application Client Project
Static Web Project
JPA Project
Project...
CSS File
JavaScript File
Servlet
Session Bean (EJB 3.x)
Message-Driven Bean (EJB 3.x)
Web Service
Folder
File
JSP File
Example...
Other... Ctrl+N
Create a Maven project
Outline
There is no active editor that provides an outline.
Markers Properties Servers Data Source Explorer Snippets Terminal Console Progress
No operations to display at this time.


New Maven Project
New Maven project
Select project name and location
Create a simple project (skip archetype selection)
Use default Workspace location
Location:
Browse...
Add project(s) to working set
Working set:
More...
Advanced
< Back
Next >
Finish
Cancel

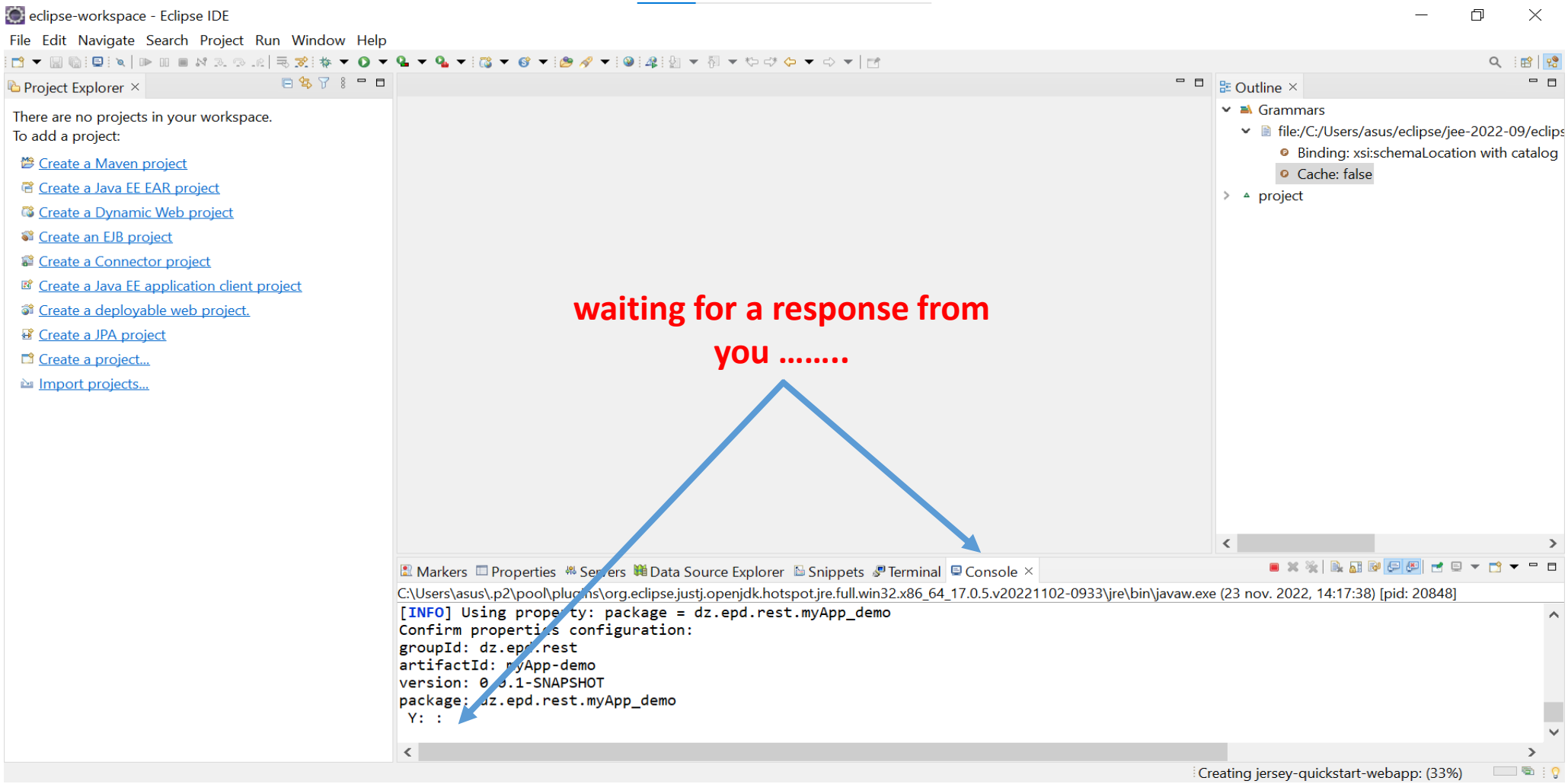

New Maven Project
New Maven project
Select an Archetype
Search :
jersey-quickstart-webapp
Catalog: All Catalogs
Configure...
Filter:
Group Id
Artifact Id
Version
am.ik.archetype
elm-spring-boot-blank...
0.0.3
am.ik.archetype
graalvm-blank-archetype
0.1.3
am.ik.archetype
graalvm-springmvc-bla...
0.1.2
am.ik.archetype
graalvm-springwebflux...
0.1.0
am.ik.archetype
maven-reactjs-blank-ar...
1.0.0
am.ik.archetype
msgpack-rpc-jersey-bla...
1.0.7
An archetype which contains a quick start Jersey-based web application project.
https://repo1.maven.org/maven2
Show the last version of Archetype only
Include snapshot archetypes
Add Archetype...
Advanced
< Back
Next >
Finish
Cancel


New Maven Project
New Maven project
Select an Archetype
Catalog: All Catalogs
Configure...
Filter: jersey-quickstart-webapp
Group Id
Artifact Id
Version
com.sun.jersey.archetypes
jersey-quickstart-webapp
1.19.4
org.glassfish.jersey.archetypes
jersey-quickstart-webapp
3.1.0
An archetype which contains a quick start Jersey-based web application project.
https://repo1.maven.org/maven2
Show the last version of Archetype only
Include snapshot archetypes
Add Archetype...
Advanced
< Back
Next >
Finish
Cancel


New Maven Project
New Maven project
Specify Archetype parameters
Your app name
Group Id: dz.epd.rest
Artifact Id: myApp-demo
Version: 0.0.1-SNAPSHOT
Package: dz.epd.rest.myApp_demo
run archetype generation interactively
Properties available from archetype:
Name
Value
Add...
Remove
Advanced
< Back
Next >
Finish
Cancel

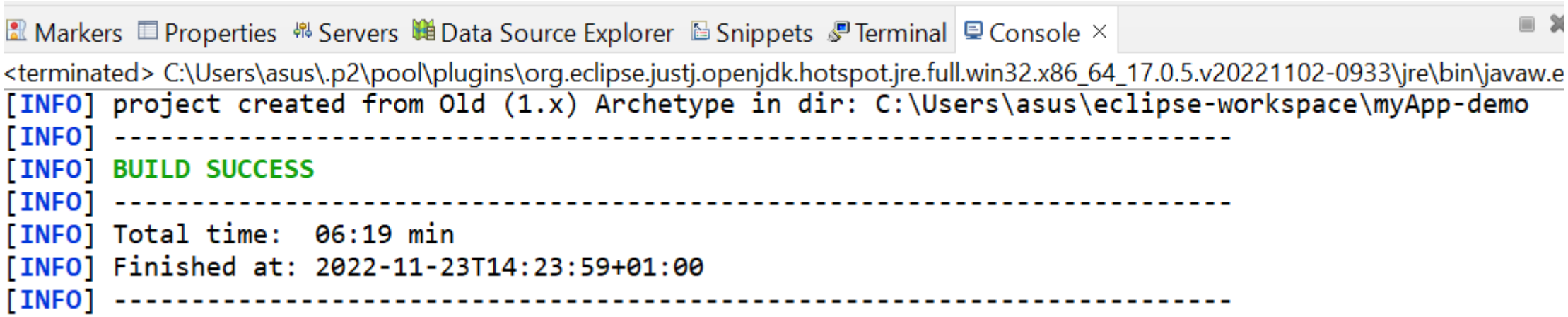

Markers
Properties
Servers
Data Source Explorer
Snippets
Terminal
Console
No consoles to display at this time.
Launching mavenrun-0ad7...664e41b: (45%)

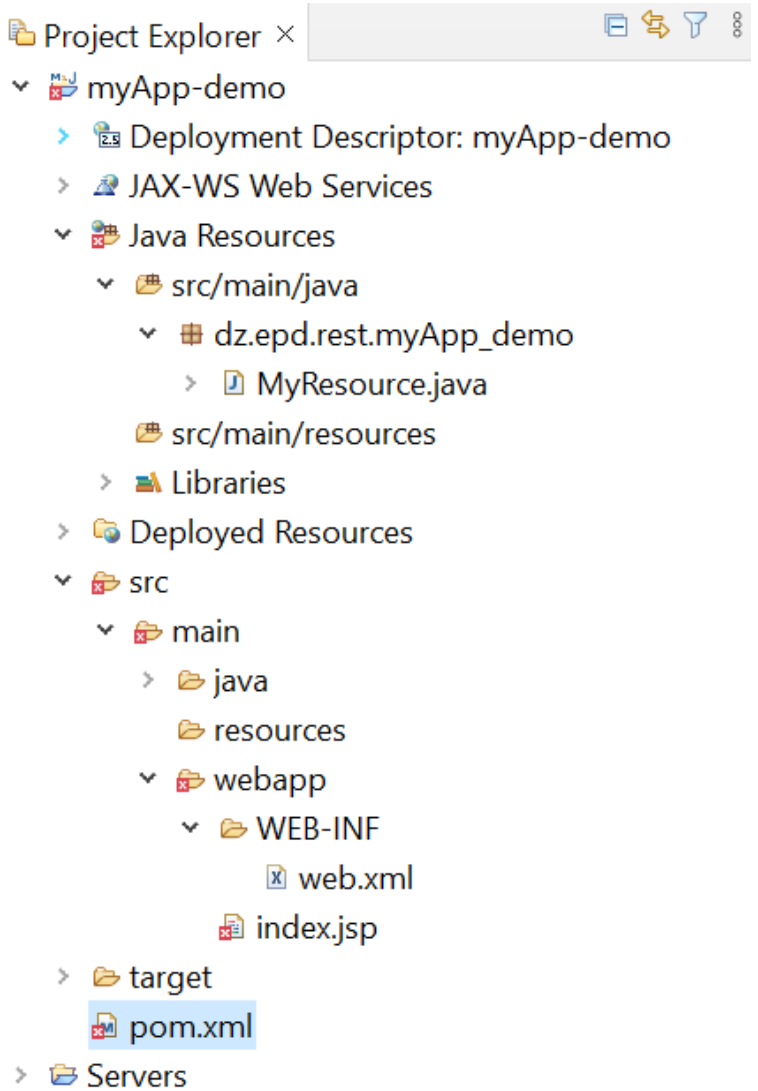
Loading ……..

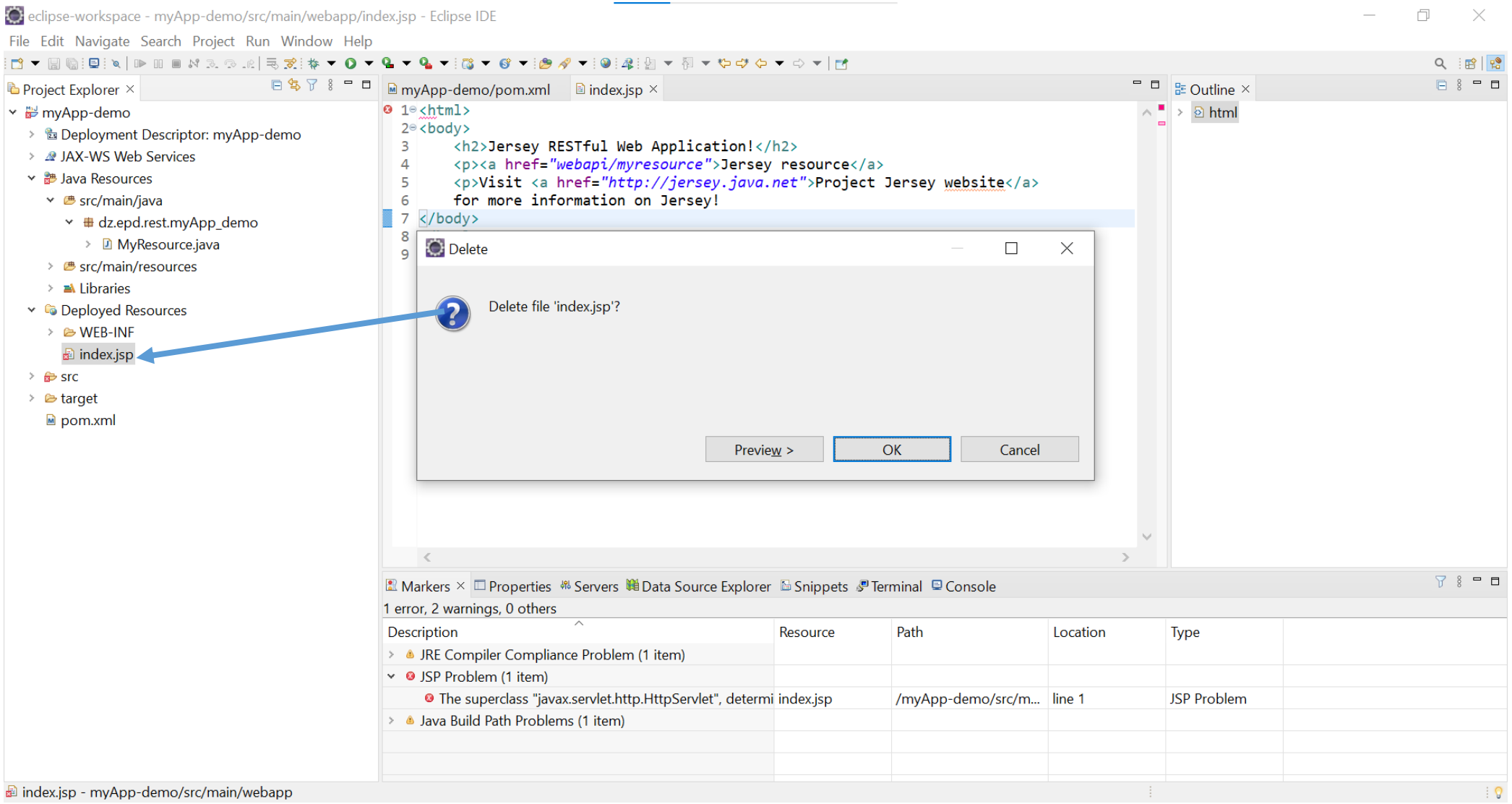

eclipse-workspace - Eclipse IDE
File Edit Navigate Search Project Run Window Help
Project Explorer
There are no projects in your workspace.
To add a project:
Create a Maven project
Create a Java EE EAR project
Create a Dynamic Web project
Create an EJB project
Create a Connector project
Create a Java EE application client project
Create a deployable web project.
Create a JPA project
Create a project...
Import projects...
waiting for a response from you ……..
Outline
Grammars
file:/C:/Users/asus/eclipse/jee-2022-09/eclips
Binding: xsi:schemaLocation with catalog
Cache: false
project
Markers Properties Servers Data Source Explorer Snippets Terminal Console
C:\Users\asus\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.5.v20221102-0933\jre\bin\javaw.exe (23 nov. 2022, 14:17:38) [pid: 20848]
[INFO] Using property: package = dz.epd.rest.myApp_demo
Confirm properties configuration:
groupId: dz.epd.rest
artifactId: myApp-demo
version: 0.0.1-SNAPSHOT
package: dz.epd.rest.myApp_demo
Y: :
Creating jersey-quickstart-webapp: (33%)

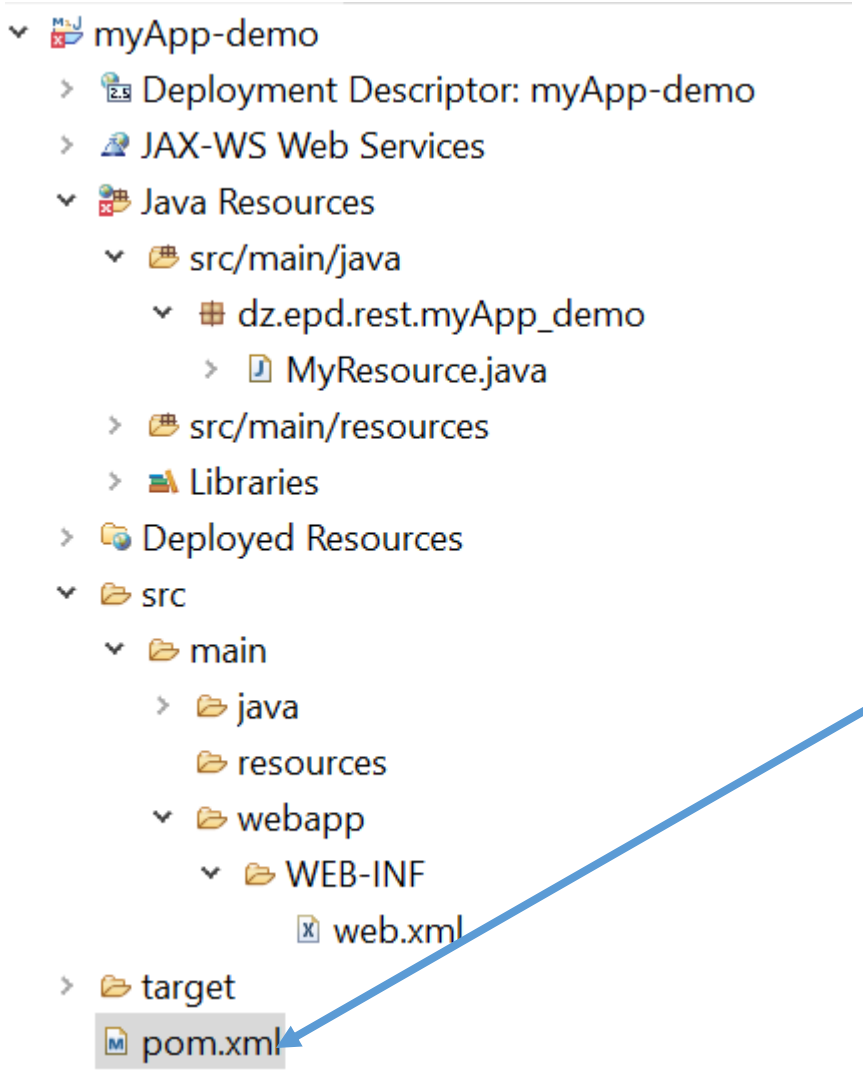
```
C:\Users\asus\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_6
[INFO] Using property: package = dz.epd.rest.myApp_demo
Confirm properties configuration:
groupId: dz.epd.rest
artifactId: myApp-demo
version: 0.0.1-SNAPSHOT
package: dz.epd.rest.myApp_demo
 Y: : y
```

to complete the process type : "y" +


Markers
Properties
Servers
Data Source Explorer
Snippets
Terminal
Console
<terminated> C:\Users\asus\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.5.v20221102-0933\jre\bin\javaw.e
[INFO] project created from Old (1.x) Archetype in dir: C:\Users\asus\eclipse-workspace\myApp-demo
[INFO] --
[INFO] BUILD SUCCESS
[INFO] --
[INFO] Total time: 06:19 min
[INFO] Finished at: 2022-11-23T14:23:59+01:00
[INFO] --


Project Explorer
myApp-demo
Deployment Descriptor: myApp-demo
JAX-WS Web Services
Java Resources
src/main/java
dz.epd.rest.myApp_demo
MyResource.java
src/main/resources
Libraries
Deployed Resources
src
main
java
resources
webapp
WEB-INF
web.xml
index.jsp
target
pom.xml
Servers


eclipse-workspace - myApp-demo/src/main/webapp/index.jsp - Eclipse IDE
File Edit Navigate Search Project Run Window Help
Project Explorer
myApp-demo
Deployment Descriptor: myApp-demo
JAX-WS Web Services
Java Resources
src/main/java
dz.epd.rest.myApp_demo
MyResource.java
src/main/resources
Libraries
Deployed Resources
WEB-INF
index.jsp
src
target
pom.xml
myApp-demo/pom.xml
index.jsp
1 <html>
2 <body>
3 <h2>Jersey RESTful Web Application!</h2>
4 <p>Jersey resource
5 <p>Visit Project Jersey website
6 for more information on Jersey!
7 </body>
8
9
Delete
Delete file 'index.jsp'?
Preview >
OK
Cancel
Outline
html
Markers
Properties
Servers
Data Source Explorer
Snippets
Terminal
Console
1 error, 2 warnings, 0 others
Description
Resource
Path
Location
Type
JRE Compiler Compliance Problem (1 item)
JSP Problem (1 item)
The superclass "javax.servlet.http.HttpServlet", determi
index.jsp
/myApp-demo/src/m...
line 1
JSP Problem
Java Build Path Problems (1 item)
index.jsp - myApp-demo/src/main/webapp



pom.xml file

Change the content of this file as follows :

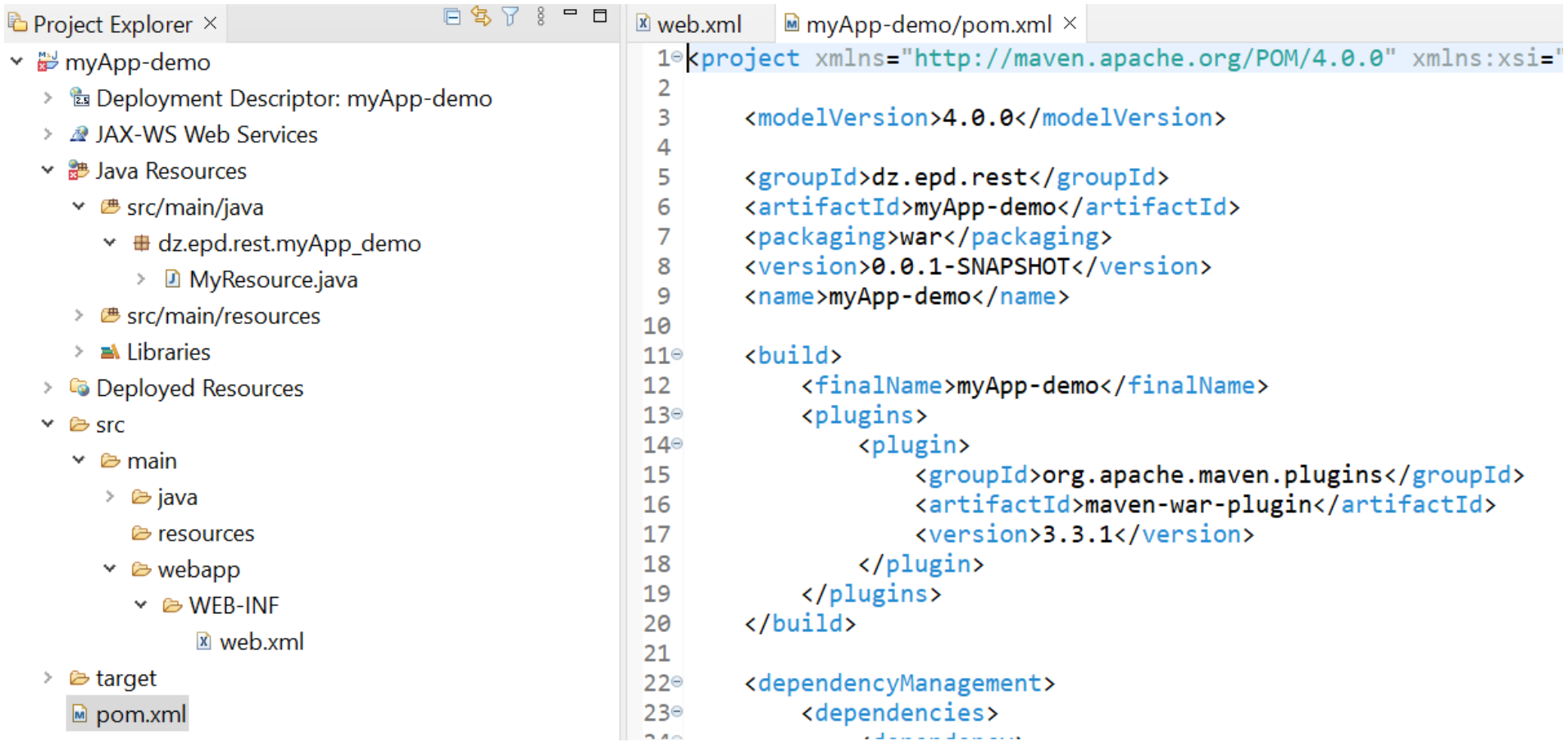
```
<plugin>
   <groupId>org.apache.maven.plugins</groupId>
   <artifactId>maven-war-plugin</artifactId>
   <version>3.3.1</version>
</plugin>
```

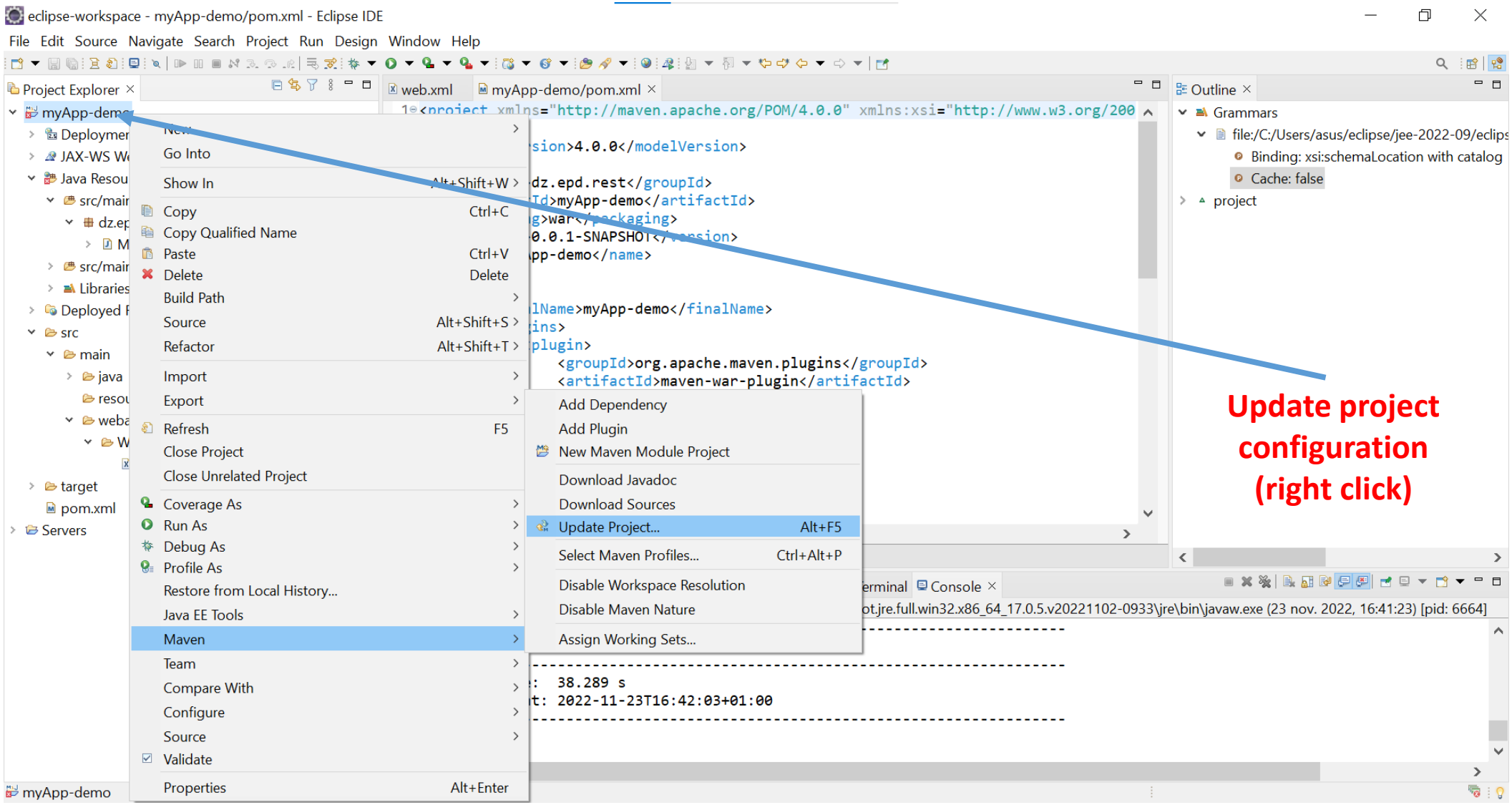
myApp-demo/pom.xml

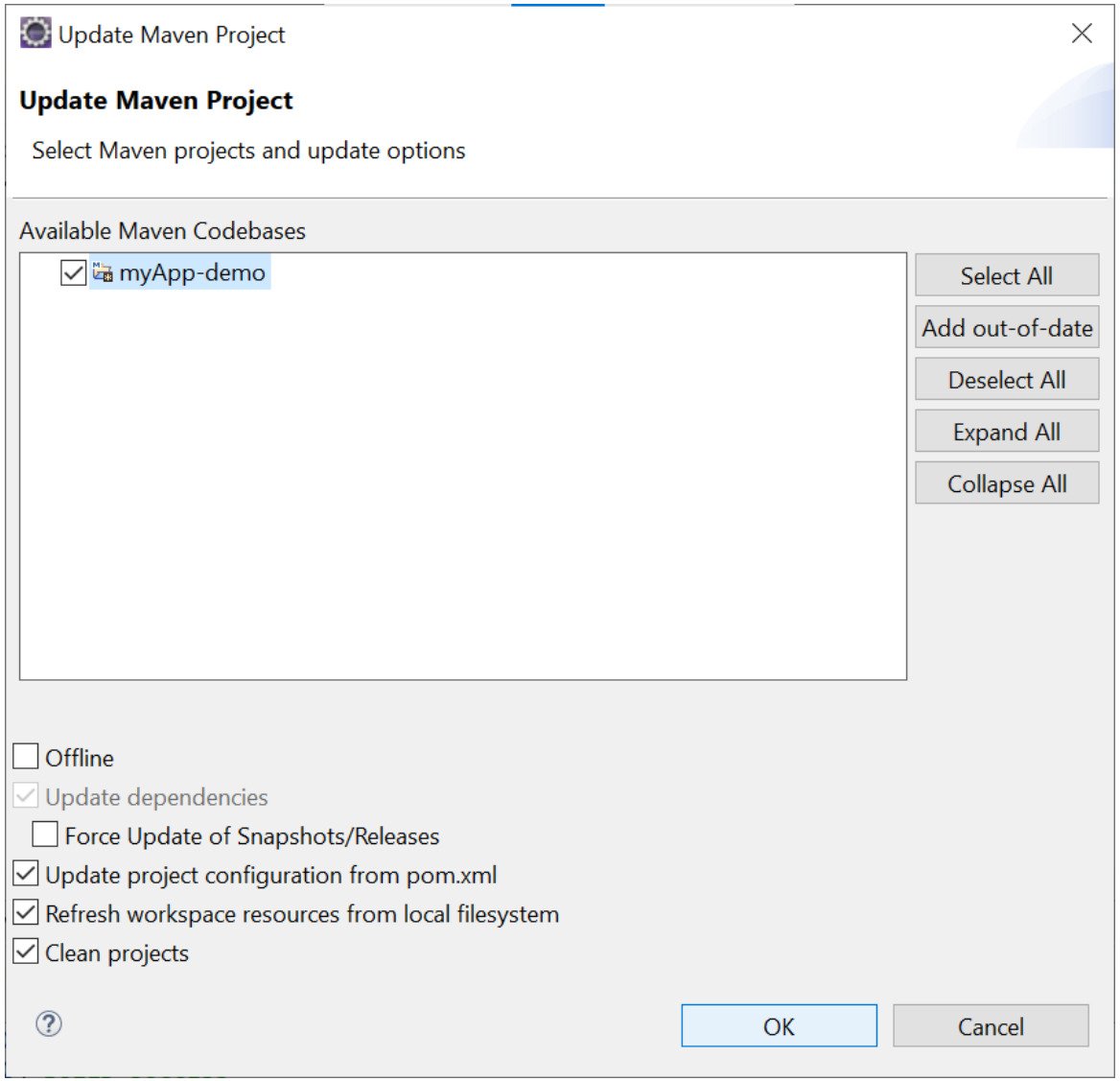
```
 7    <artifactId>myApp-demo</artifactId>
 8    <packaging>war</packaging>
 9    <version>0.0.1-SNAPSHOT</version>
10    <name>myApp-demo</name>
11
12    <build>
13        <finalName>myApp-demo</finalName>
14        <plugins>
15            <plugin>
16                <groupId>org.apache.maven.plugins</groupId>
17                <artifactId>maven-compiler-plugin</artifactId>
18                <version>3.8.1</version>
19                <inherited>true</inherited>
20                <configuration>
21                    <source>1.8</source>
22                    <target>1.8</target>
23                </configuration>
24            </plugin>
25        </plugins>
26    </build>
```

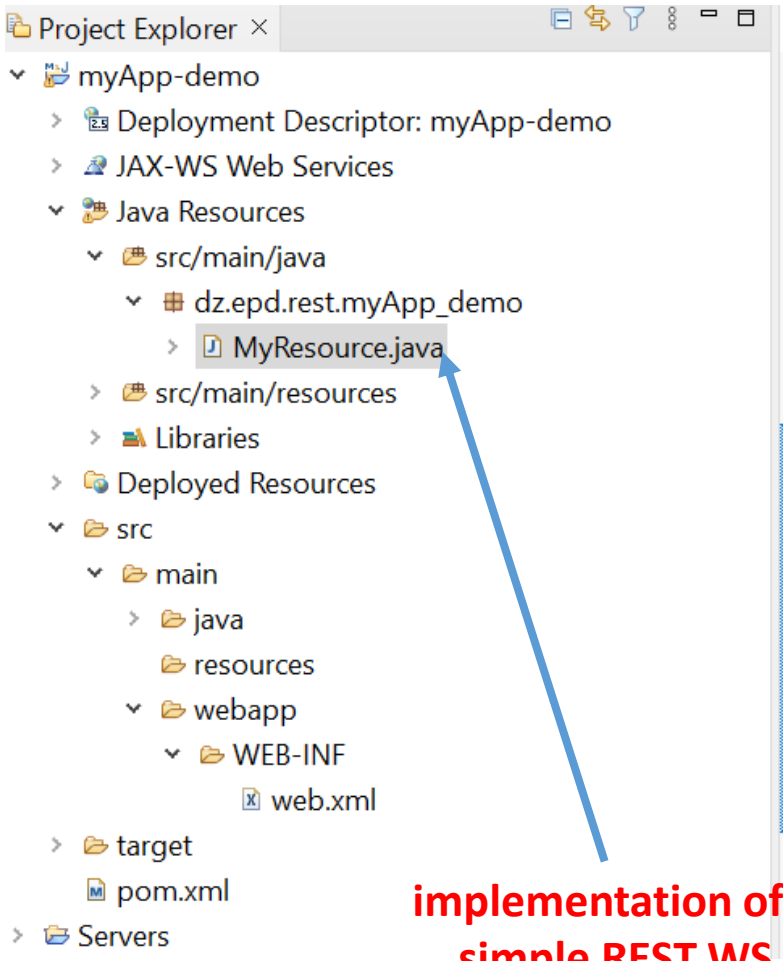
myApp-demo/pom.xml

```
 6    <artifactId>myApp-demo</artifactId>
 7    <packaging>war</packaging>
 8    <version>0.0.1-SNAPSHOT</version>
 9    <name>myApp-demo</name>
10
11    <build>
12        <finalName>myApp-demo</finalName>
13        <plugins>
14            <plugin>
15                <groupId>org.apache.maven.plugins</groupId>
16                <artifactId>maven-war-plugin</artifactId>
17                <version>3.3.1</version>
18            </plugin>
19        </plugins>
20    </build>
```


Project Explorer
myApp-demo
Deployment Descriptor: myApp-demo
JAX-WS Web Services
Java Resources
src/main/java
dz.epd.rest.myApp_demo
MyResource.java
src/main/resources
Libraries
Deployed Resources
src
main
java
resources
webapp
WEB-INF
web.xml
target
pom.xml
web.xml
myApp-demo/pom.xml
<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="
<modelVersion>4.0.0</modelVersion>
<groupId>dz.epd.rest</groupId>
<artifactId>myApp-demo</artifactId>
<packaging>war</packaging>
<version>0.0.1-SNAPSHOT</version>
<name>myApp-demo</name>
<build>
<finalName>myApp-demo</finalName>
<plugins>
<plugin>
<groupId>org.apache.maven.plugins</groupId>
<artifactId>maven-war-plugin</artifactId>
<version>3.3.1</version>
</plugin>
</plugins>
</build>
<dependencyManagement>
<dependencies>


eclipse-workspace - myApp-demo/pom.xml - Eclipse IDE
File Edit Source Navigate Search Project Run Design Window Help
Project Explorer
web.xml
myApp-demo/pom.xml
Outline
Grammars
Binding: xsi:schemaLocation with catalog
Cache: false
project
Go Into
Show In Alt+Shift+W
Copy Ctrl+C
Copy Qualified Name
Paste Ctrl+V
Delete Delete
Build Path
Source Alt+Shift+S
Refactor Alt+Shift+T
Import
Export
Refresh F5
Close Project
Close Unrelated Project
Coverage As
Run As
Debug As
Profile As
Restore from Local History...
Java EE Tools
Maven
Team
Compare With
Configure
Source
Validate
Properties Alt+Enter
Add Dependency
Add Plugin
New Maven Module Project
Download Javadoc
Download Sources
Update Project... Alt+F5
Select Maven Profiles... Ctrl+Alt+P
Disable Workspace Resolution
Disable Maven Nature
Assign Working Sets...
Console
Update project configuration (right click)
myApp-demo


Update Maven Project
Update Maven Project
Select Maven projects and update options
Available Maven Codebases
myApp-demo
Select All
Add out-of-date
Deselect All
Expand All
Collapse All
Offline
Update dependencies
Force Update of Snapshots/Releases
Update project configuration from pom.xml
Refresh workspace resources from local filesystem
Clean projects
OK
Cancel



implementation of a simple REST WS

MyResource.java

```
1  package dz.epd.rest.myApp_demo;
2
3  import jakarta.ws.rs.GET;
7
8  /**
9   * Root resource (exposed at "myresource" path)
10  */
11 @Path("myresource")
12 public class MyResource {
13
14     /**
15      * Method handling HTTP GET requests. The returned object will be sent
16      * to the client as "text/plain" media type.
17      *
18      * @return String that will be returned as a text/plain response.
19      */
20     @GET
21     @Produces(MediaType.TEXT_PLAIN)
22     public String getIt() {
23         return "Got it!";
24     }
25 }
26
```

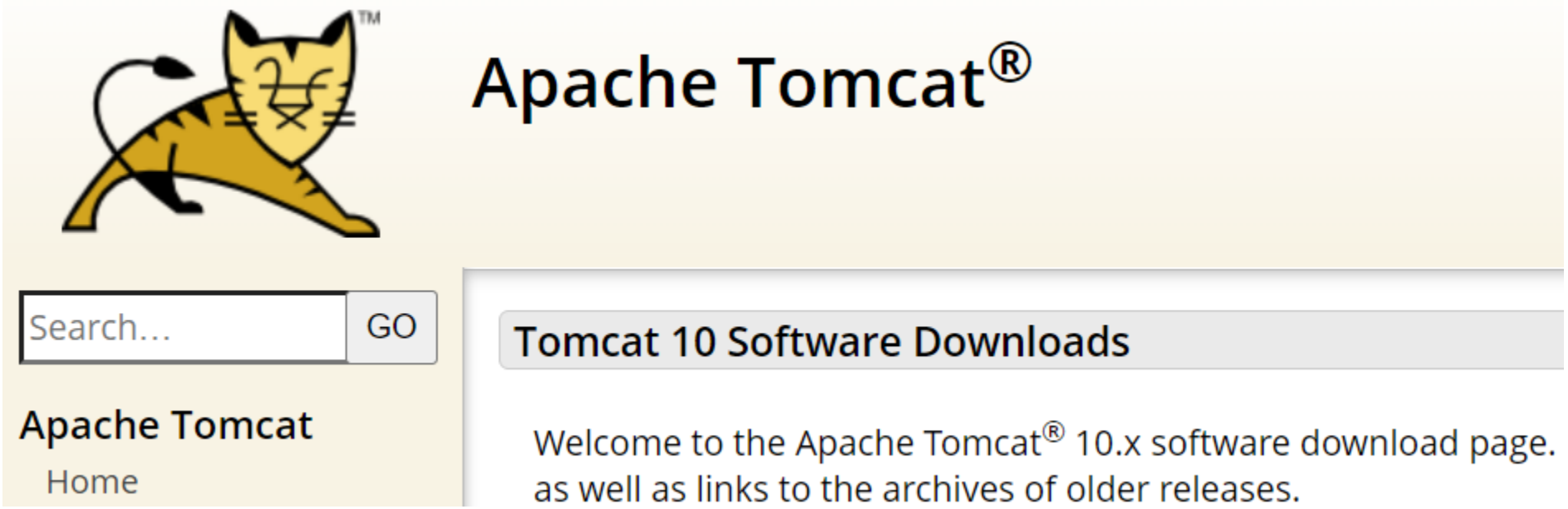
the resource exposes a single method that is able to handle HTTP GET requests, is bound to /myresource URI path

Launch your REST WS

Part 2

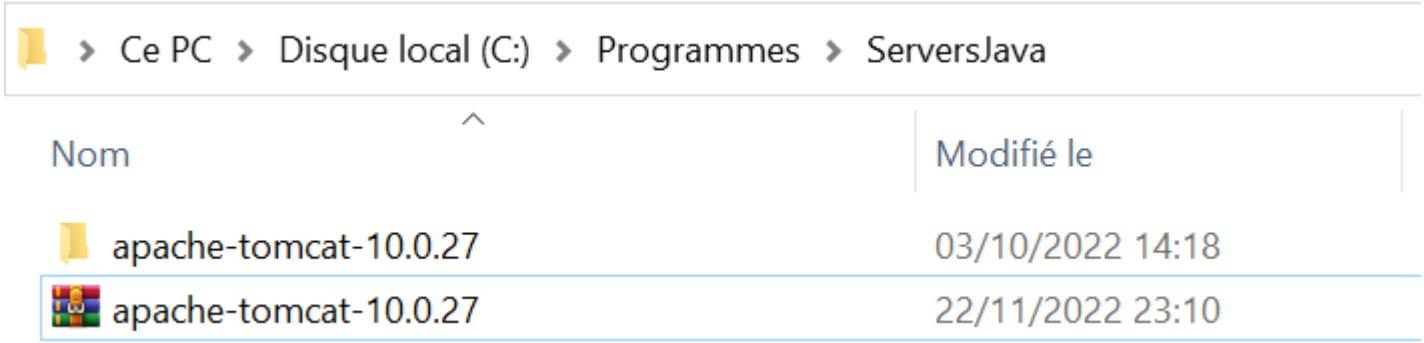
Tools

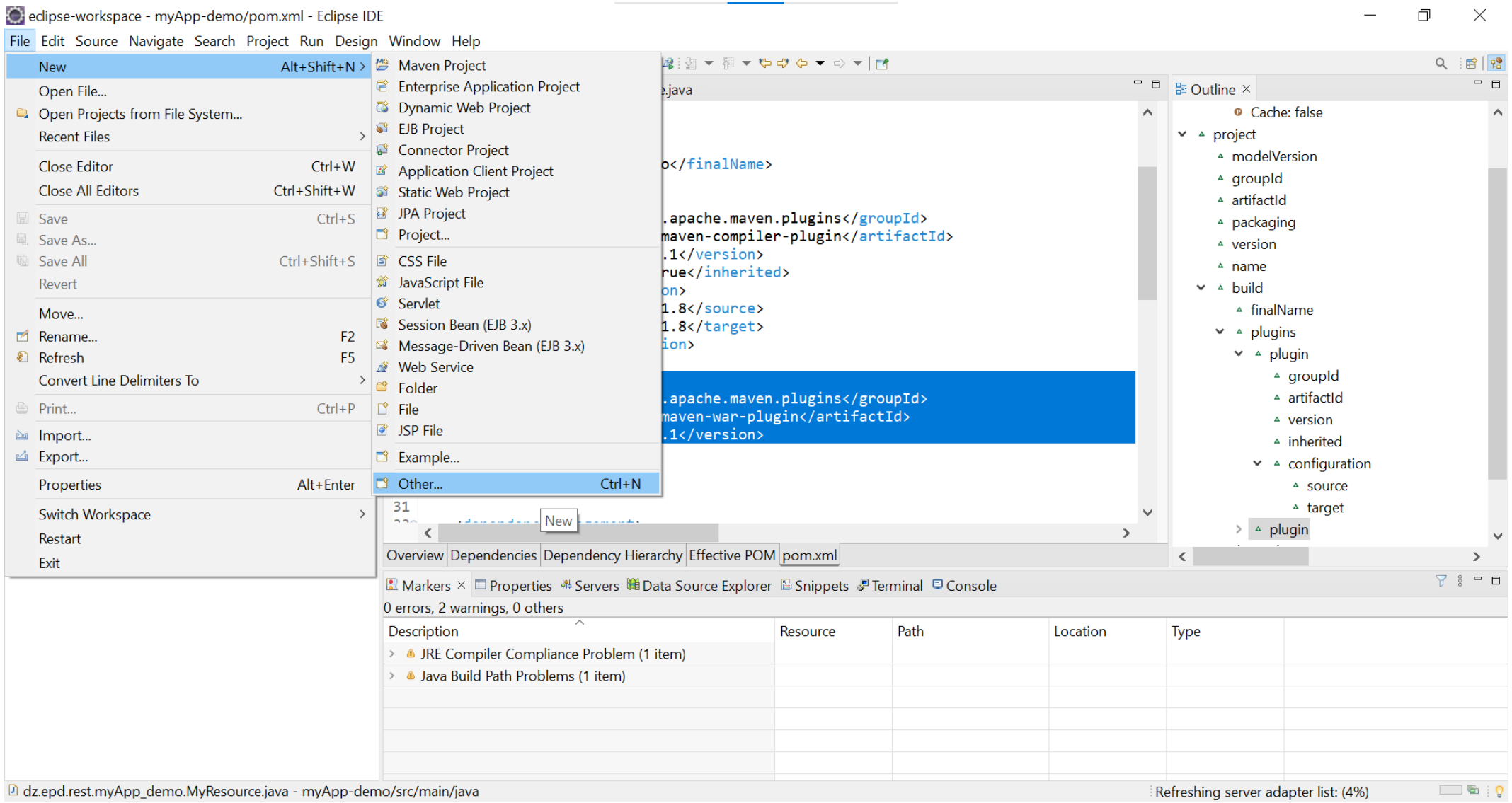
Download Apache Tomcat

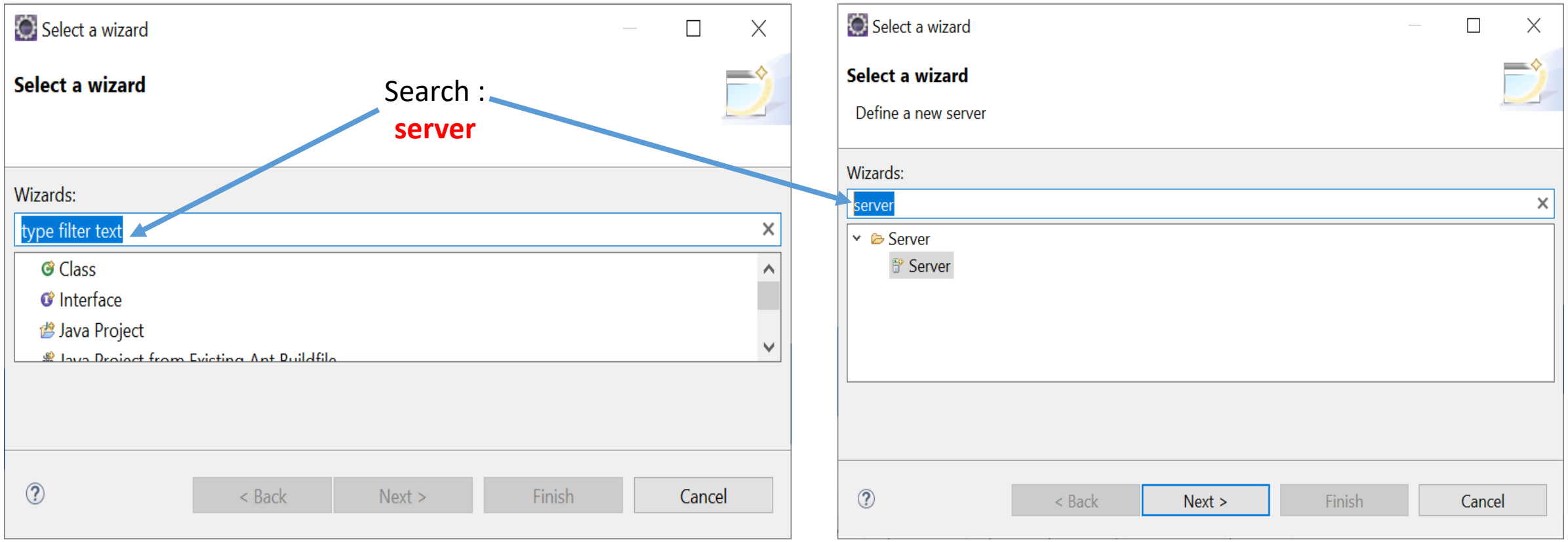


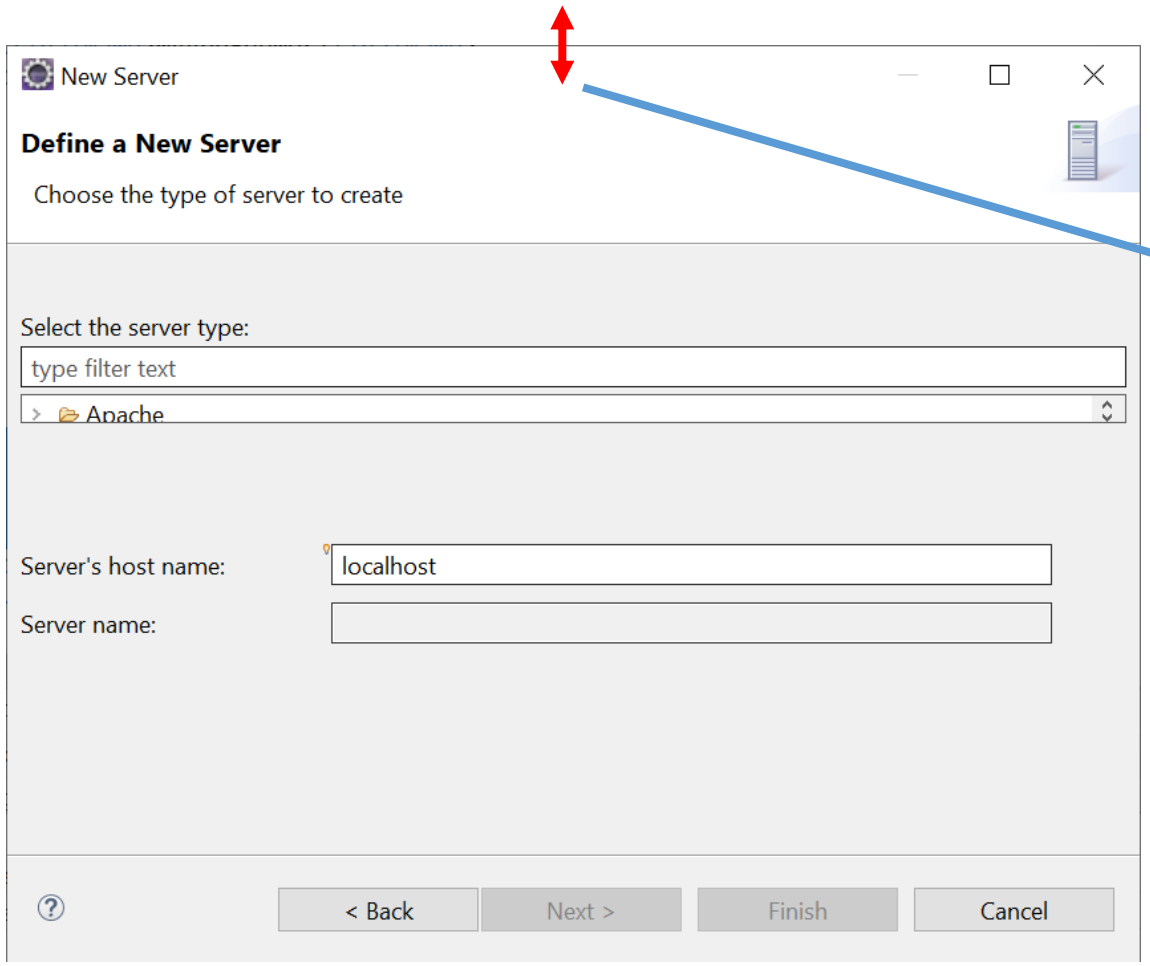
https://dlcdn.apache.org/tomcat/tomcat-10/v10.0.27/bin/apache-tomcat-10.0.27.zip

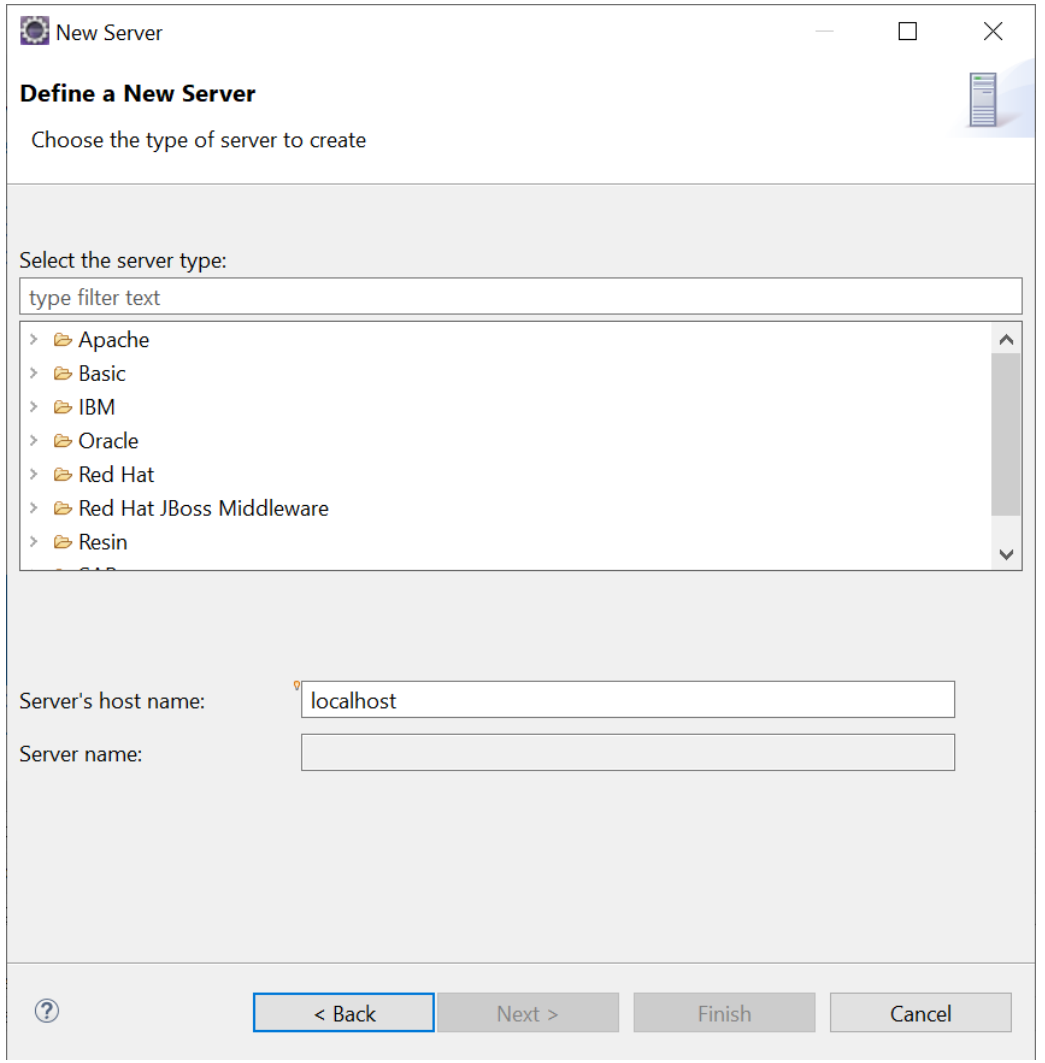
Extract the file to a directory of your choice

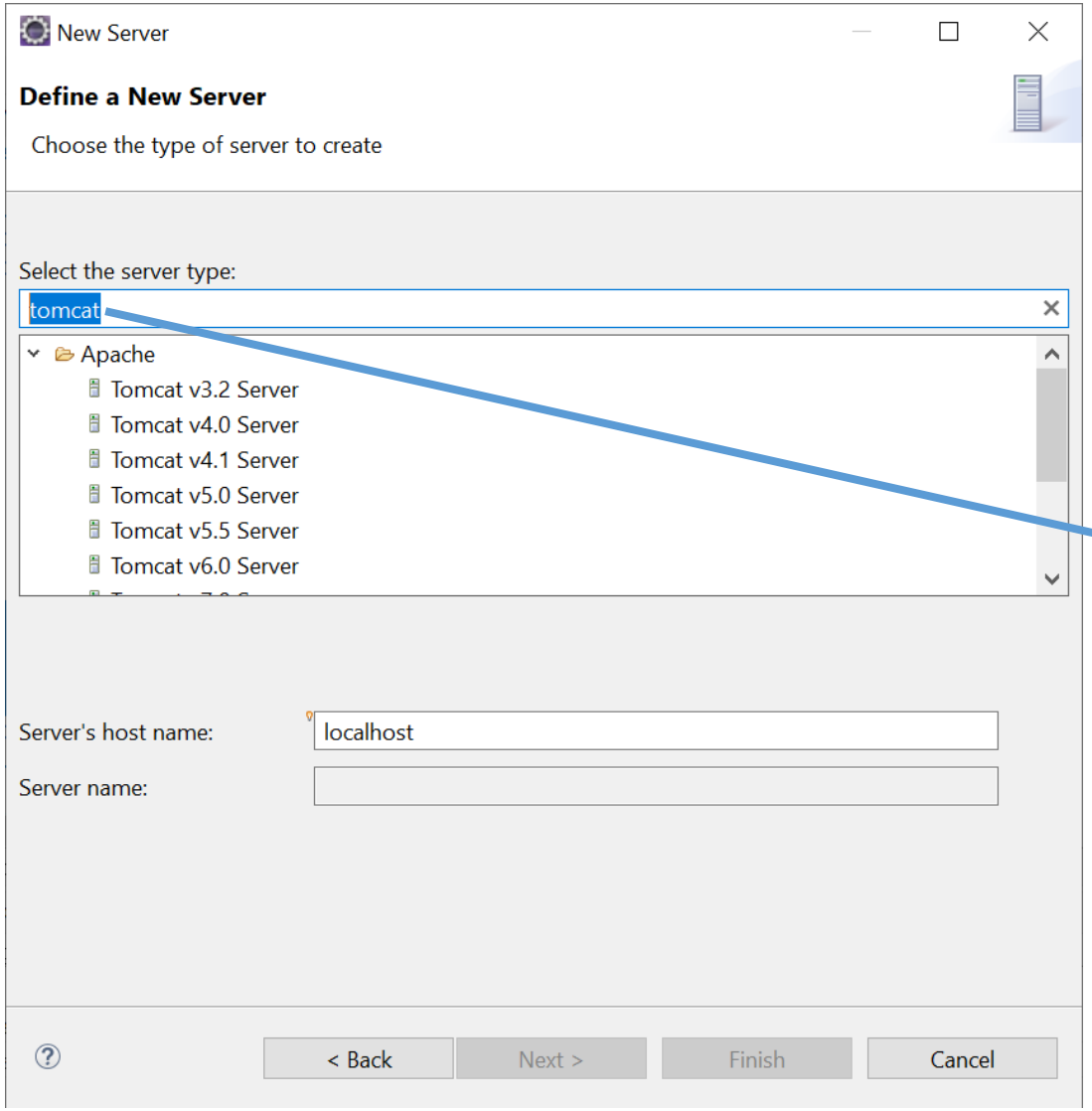


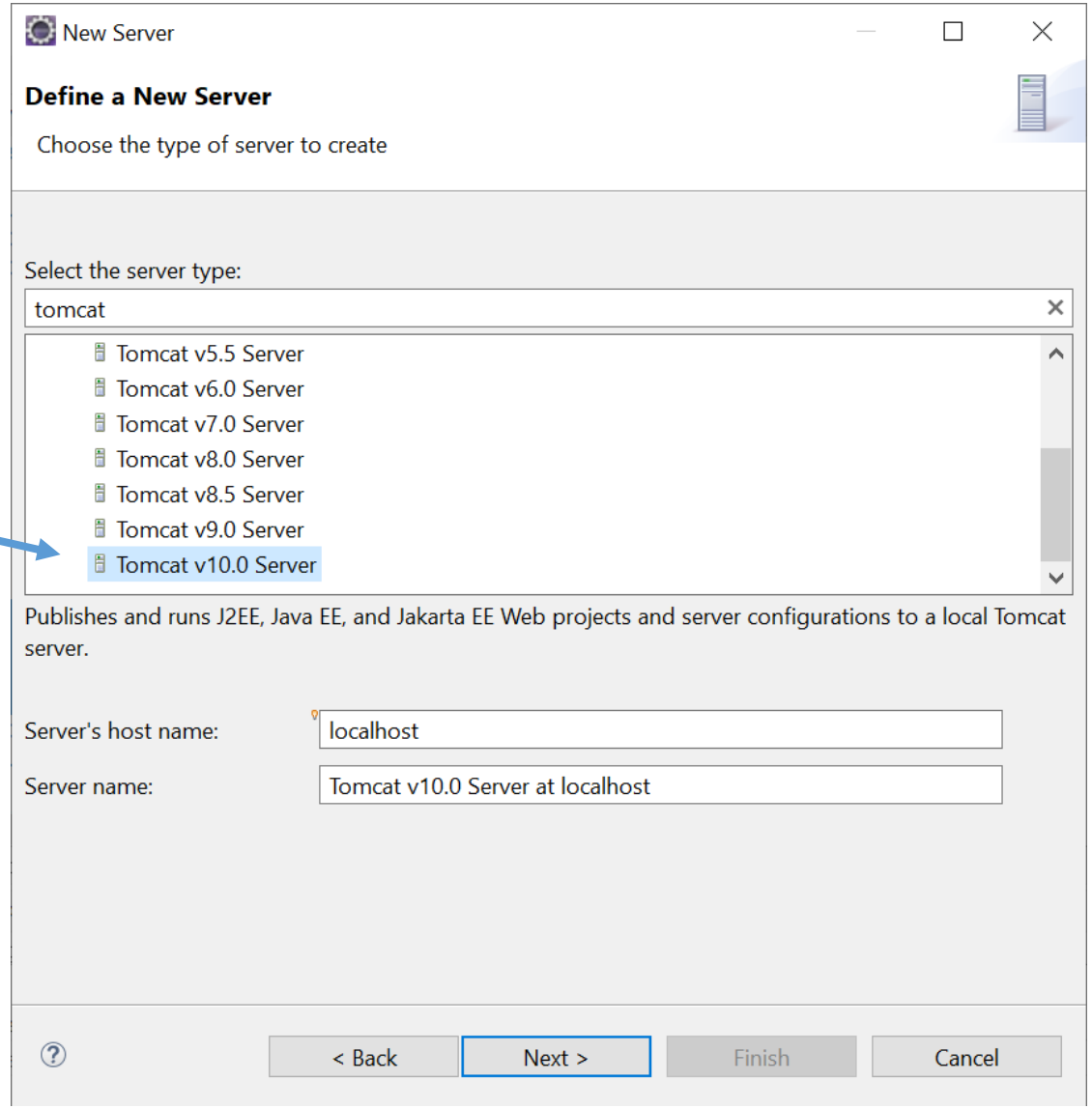

eclipse-workspace - myApp-demo/pom.xml - Eclipse IDE
File Edit Source Navigate Search Project Run Design Window Help
New Alt+Shift+N
Open File...
Open Projects from File System...
Recent Files
Close Editor Ctrl+W
Close All Editors Ctrl+Shift+W
Save Ctrl+S
Save As...
Save All Ctrl+Shift+S
Revert
Move...
Rename... F2
Refresh F5
Convert Line Delimiters To
Print... Ctrl+P
Import...
Export...
Properties Alt+Enter
Switch Workspace
Restart
Exit
Maven Project
Enterprise Application Project
Dynamic Web Project
EJB Project
Connector Project
Application Client Project
Static Web Project
JPA Project
Project...
CSS File
JavaScript File
Servlet
Session Bean (EJB 3.x)
Message-Driven Bean (EJB 3.x)
Web Service
Folder
File
JSP File
Example...
Other... Ctrl+N
New
Outline
Cache: false
project
modelVersion
groupId
artifactId
packaging
version
name
build
finalName
plugins
plugin
groupId
artifactId
version
inherited
configuration
source
target
plugin
Overview Dependencies Dependency Hierarchy Effective POM pom.xml
Markers Properties Servers Data Source Explorer Snippets Terminal Console
0 errors, 2 warnings, 0 others
Description Resource Path Location Type
JRE Compiler Compliance Problem (1 item)
Java Build Path Problems (1 item)
dz.epd.rest.myApp_demo.MyResource.java - myApp-demo/src/main/java
Refreshing server adapter list: (4%)

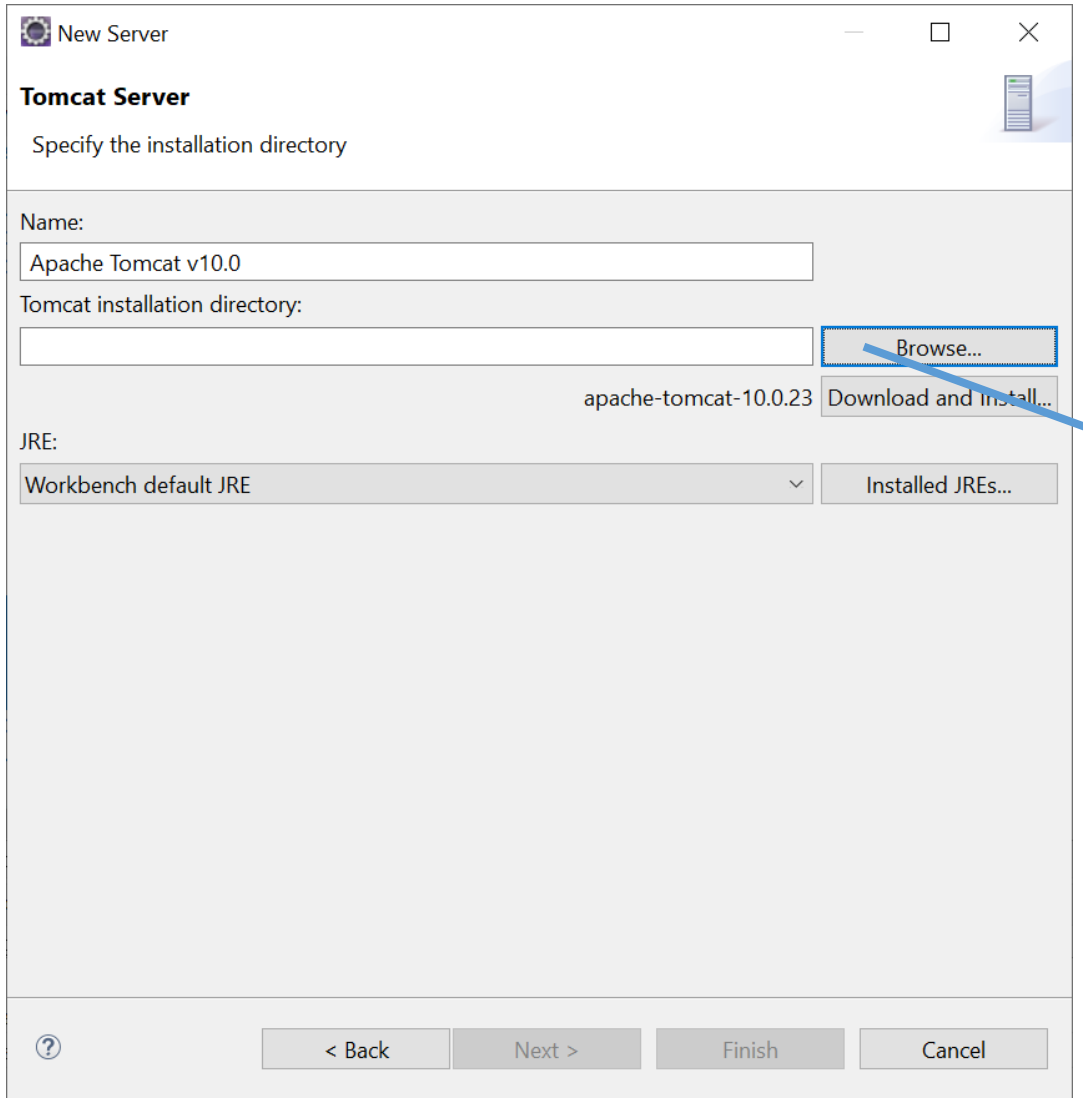

Select a wizard
Select a wizard
Search :
server
Wizards:
type filter text
Class
Interface
Java Project
< Back
Next >
Finish
Cancel
Select a wizard
Select a wizard
Define a new server
Wizards:
server
Server
Server
< Back
Next >
Finish
Cancel

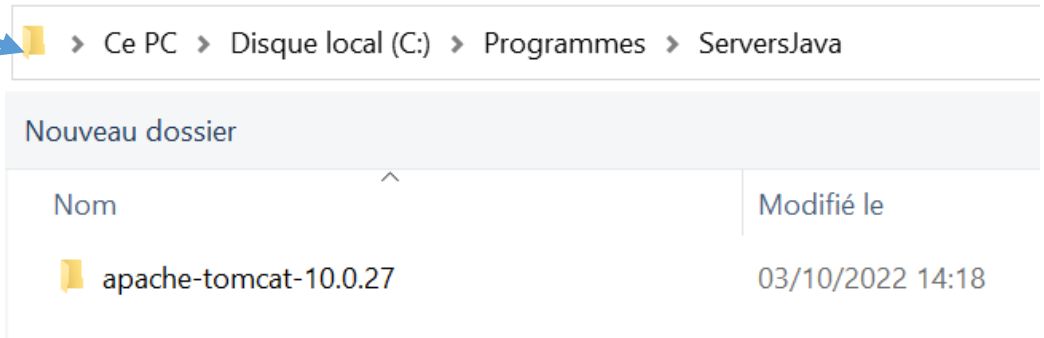

New Server
Define a New Server
Choose the type of server to create
Select the server type:
type filter text
Apache
Server's host name:
localhost
Server name:
< Back
Next >
Finish
Cancel

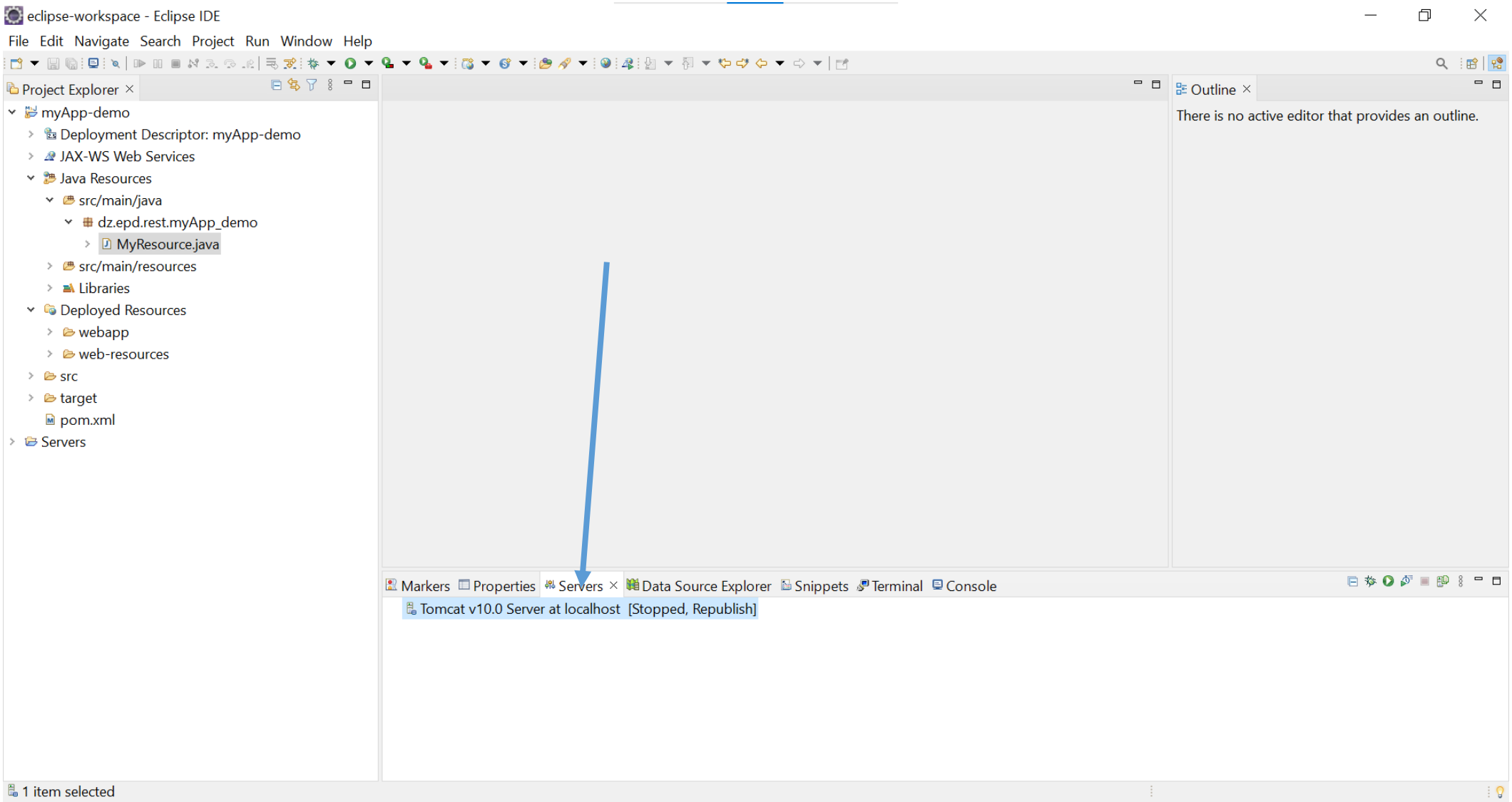

New Server
Define a New Server
Choose the type of server to create
Select the server type:
type filter text
Apache
Basic
IBM
Oracle
Red Hat
Red Hat JBoss Middleware
Resin
Server's host name:
localhost
Server name:
< Back
Next >
Finish
Cancel

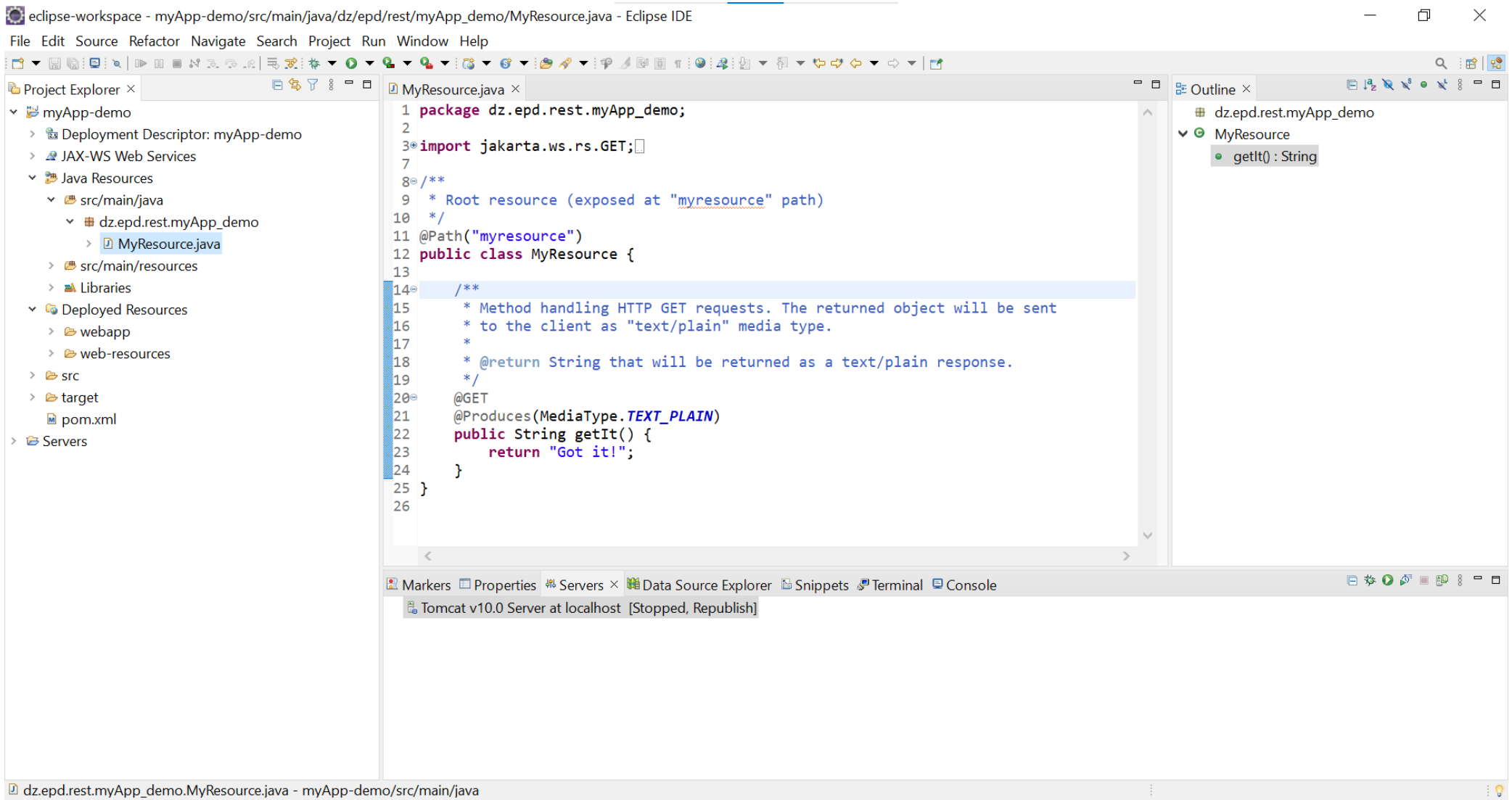

New Server
Define a New Server
Choose the type of server to create
Select the server type:
tomcat
Apache
Tomcat v3.2 Server
Tomcat v4.0 Server
Tomcat v4.1 Server
Tomcat v5.0 Server
Tomcat v5.5 Server
Tomcat v6.0 Server
Server's host name:
localhost
Server name:
< Back
Next >
Finish
Cancel

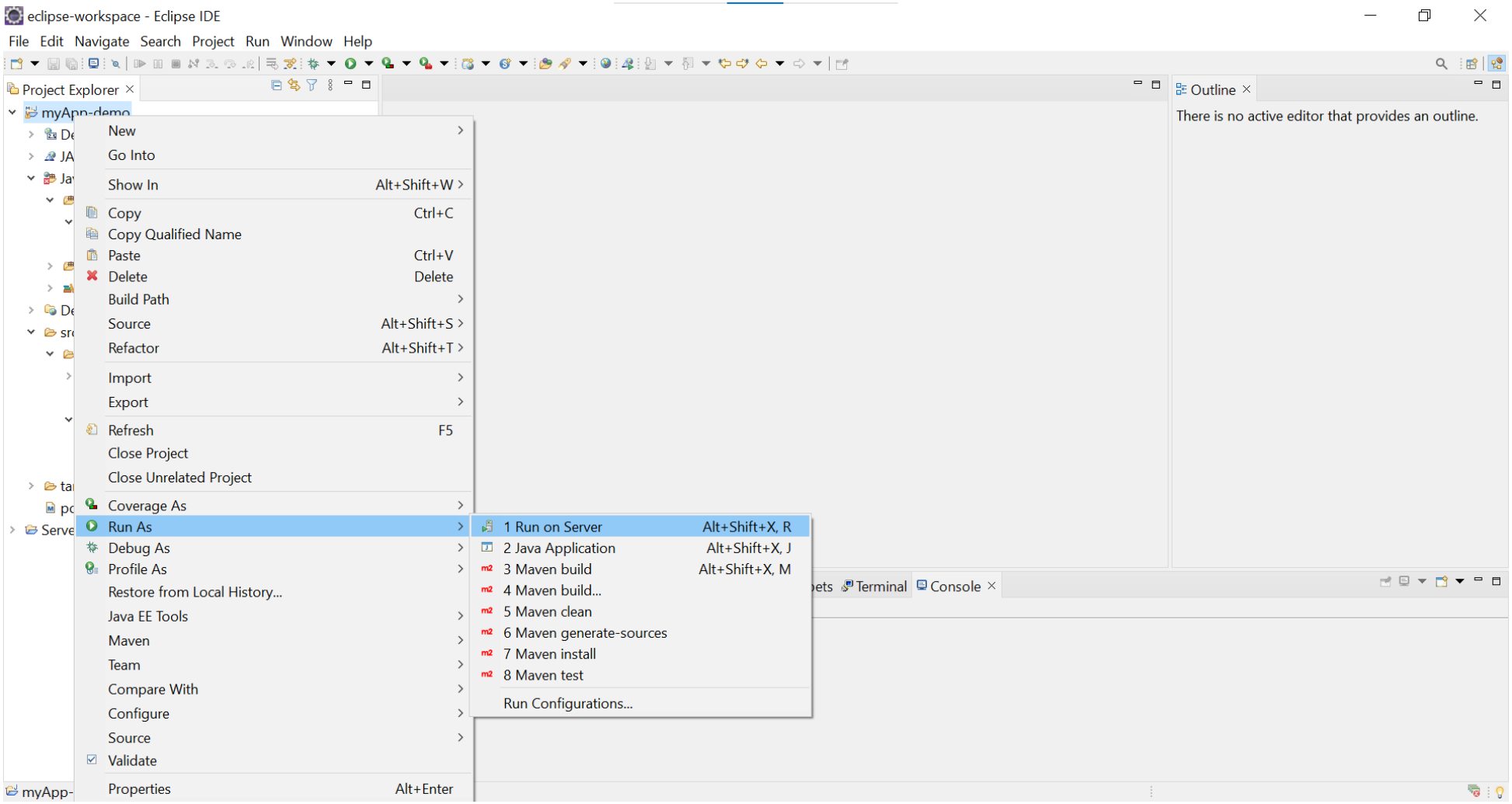

New Server
Define a New Server
Choose the type of server to create
Select the server type:
tomcat
Tomcat v5.5 Server
Tomcat v6.0 Server
Tomcat v7.0 Server
Tomcat v8.0 Server
Tomcat v8.5 Server
Tomcat v9.0 Server
Tomcat v10.0 Server
Publishes and runs J2EE, Java EE, and Jakarta EE Web projects and server configurations to a local Tomcat server.
Server's host name:
localhost
Server name:
Tomcat v10.0 Server at localhost
< Back
Next >
Finish
Cancel

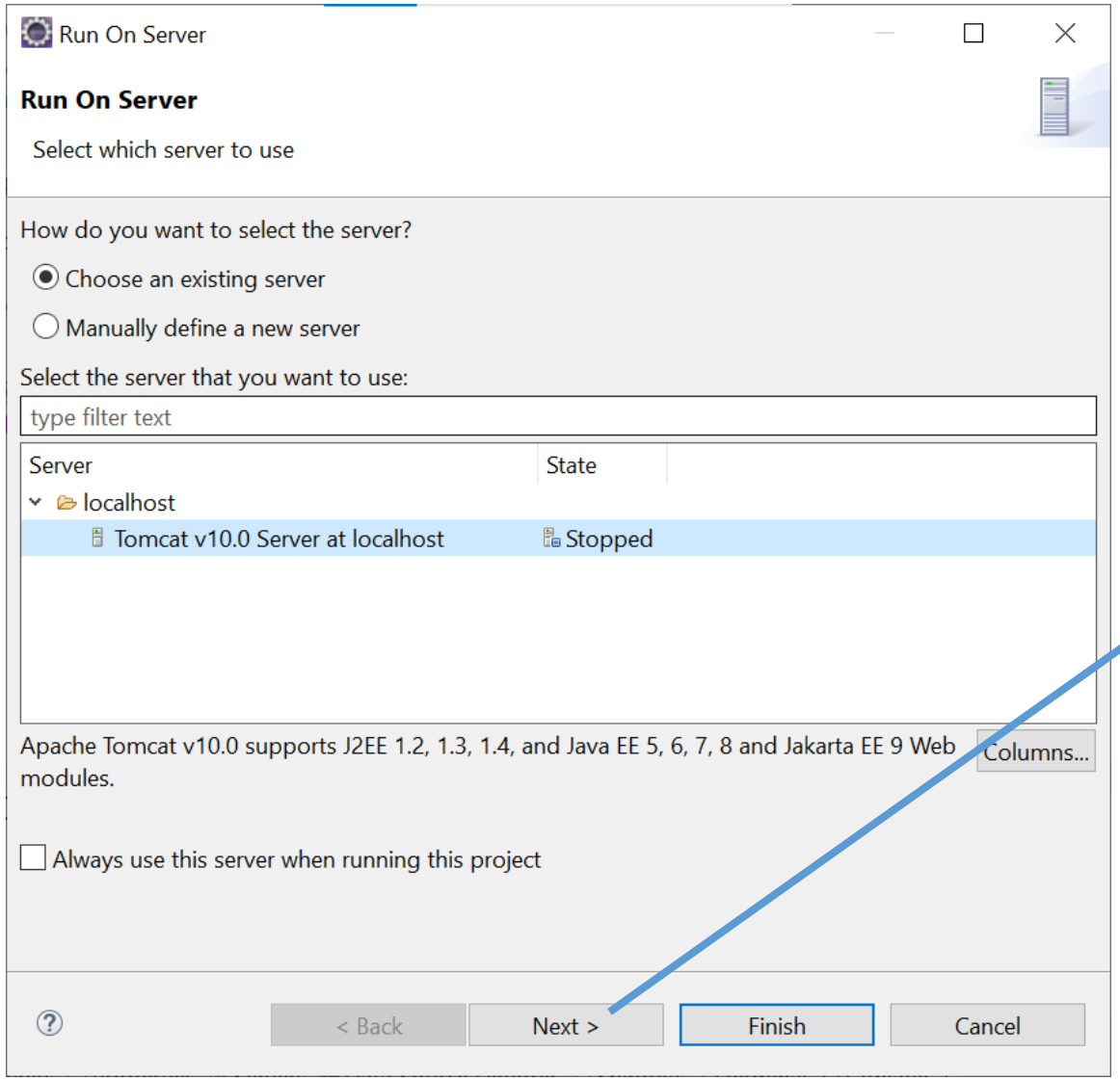

New Server
Tomcat Server
Specify the installation directory
Name:
Apache Tomcat v10.0
Tomcat installation directory:
Browse...
apache-tomcat-10.0.23
Download and install...
JRE:
Workbench default JRE
Installed JREs...
< Back
Next >
Finish
Cancel

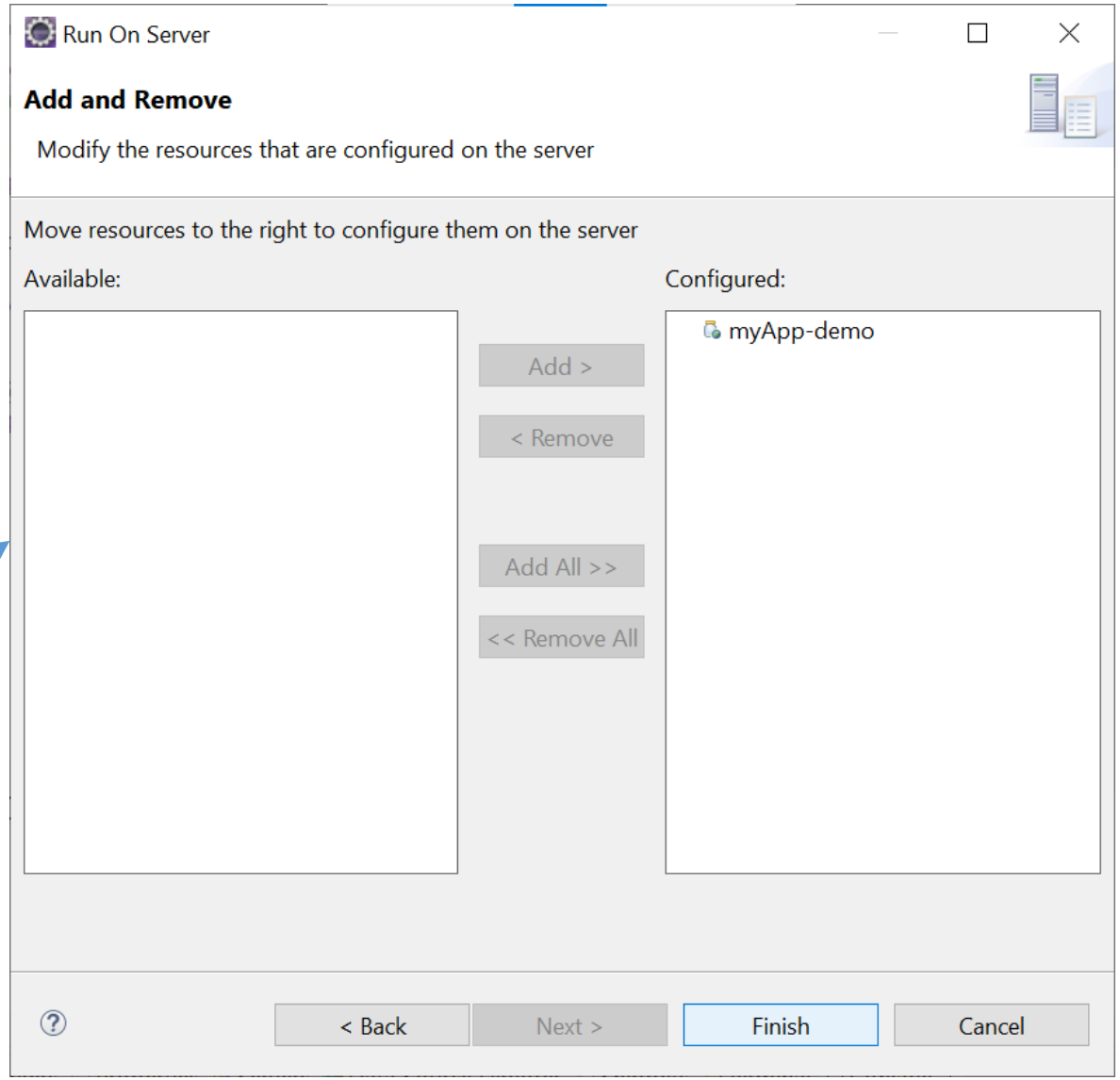

Ce PC
Disque local (C:)
Programmes
ServersJava
Nouveau dossier
Nom
Modifié le
apache-tomcat-10.0.27
03/10/2022 14:18


eclipse-workspace - Eclipse IDE
File Edit Navigate Search Project Run Window Help
Project Explorer
myApp-demo
Deployment Descriptor: myApp-demo
JAX-WS Web Services
Java Resources
src/main/java
dz.epd.rest.myApp_demo
MyResource.java
src/main/resources
Libraries
Deployed Resources
webapp
web-resources
src
target
pom.xml
Servers
Outline
There is no active editor that provides an outline.
Markers
Properties
Servers
Data Source Explorer
Snippets
Terminal
Console
Tomcat v10.0 Server at localhost [Stopped, Republish]
1 item selected

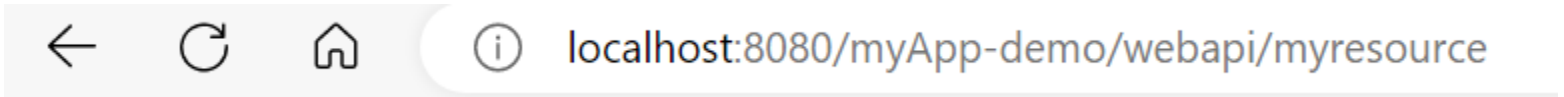

eclipse-workspace - myApp-demo/src/main/java/dz/epd/rest/myApp_demo/MyResource.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Project Explorer
myApp-demo
Deployment Descriptor: myApp-demo
JAX-WS Web Services
Java Resources
src/main/java
dz.epd.rest.myApp_demo
MyResource.java
src/main/resources
Libraries
Deployed Resources
webapp
web-resources
src
target
pom.xml
Servers
MyResource.java
1 package dz.epd.rest.myApp_demo;
2
3 import jakarta.ws.rs.GET;
7
8 /**
9 * Root resource (exposed at "myresource" path)
10 */
11 @Path("myresource")
12 public class MyResource {
13
14 /**
15 * Method handling HTTP GET requests. The returned object will be sent
16 * to the client as "text/plain" media type.
17 *
18 * @return String that will be returned as a text/plain response.
19 */
20 @GET
21 @Produces(MediaType.TEXT_PLAIN)
22 public String getIt() {
23 return "Got it!";
24 }
25 }
26
Outline
dz.epd.rest.myApp_demo
MyResource
getIt() : String
Markers Properties Servers Data Source Explorer Snippets Terminal Console
Tomcat v10.0 Server at localhost [Stopped, Republish]
dz.epd.rest.myApp_demo.MyResource.java - myApp-demo/src/main/java


eclipse-workspace - Eclipse IDE
File Edit Navigate Search Project Run Window Help
Project Explorer
myApp-demo
Outline
There is no active editor that provides an outline.
Terminal
Console
New
Go Into
Show In Alt+Shift+W
Copy Ctrl+C
Copy Qualified Name
Paste Ctrl+V
Delete Delete
Build Path
Source Alt+Shift+S
Refactor Alt+Shift+T
Import
Export
Refresh F5
Close Project
Close Unrelated Project
Coverage As
Run As
Debug As
Profile As
Restore from Local History...
Java EE Tools
Maven
Team
Compare With
Configure
Source
Validate
Properties Alt+Enter
1 Run on Server Alt+Shift+X, R
2 Java Application Alt+Shift+X, J
3 Maven build Alt+Shift+X, M
4 Maven build...
5 Maven clean
6 Maven generate-sources
7 Maven install
8 Maven test
Run Configurations...


Run On Server
Run On Server
Select which server to use
How do you want to select the server?
Choose an existing server
Manually define a new server
Select the server that you want to use:
type filter text
Server
State
localhost
Tomcat v10.0 Server at localhost
Stopped
Apache Tomcat v10.0 supports J2EE 1.2, 1.3, 1.4, and Java EE 5, 6, 7, 8 and Jakarta EE 9 Web modules.
Columns...
Always use this server when running this project
< Back
Next >
Finish
Cancel


Run On Server
Add and Remove
Modify the resources that are configured on the server
Move resources to the right to configure them on the server
Available:
Configured:
myApp-demo
Add >
< Remove
Add All >>
<< Remove All
< Back
Next >
Finish
Cancel

You can then access the methods of the WS

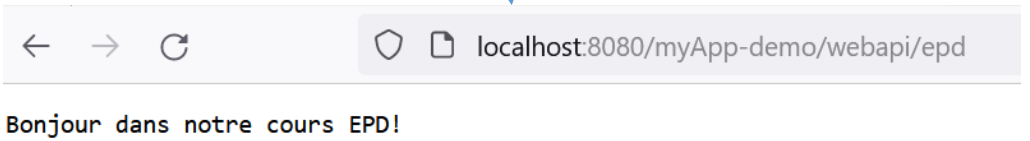


http://localhost:8080/myApp-demo/webapi**/myresource**

MyResource.java

```java
package dz.epd.rest.myApp_demo;

import jakarta.ws.rs.GET;

/**
 * Root resource (exposed at "myresource" path)
 */
@Path("epd")
public class MyResource {

    /**
     * Method handling HTTP GET requests. The returned object will be sent
     * to the client as "text/plain" media type.
     *
     * @return String that will be returned as a text/plain response.
     */
    @GET
    @Produces(MediaType.TEXT_PLAIN)
    public String getIt() {
        return "Bonjour dans notre cours EPD!";
    }
}
```

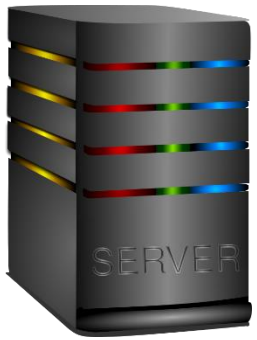
http://localhost:8080/myApp-demo/webapi/**epd**



Let's create a simple REST web service that consume a JSON file and return a JSON response

```
{"id":1,
"name": "Ali",
"age" : 24}
```

REST WS




```
{"name": "Ali",
"age" : 24}
```

Client

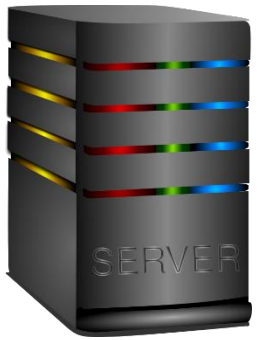
POST http://localhost:8080/myApp-demo/webapi/client

Server

Request 1

```
{"id":2,
"name": "Mohamed",
"age" : 45}
```

REST WS




```
{"name": "Mohamed",
"age" : 45}
```

Client

POST http://localhost:8080/myApp-demo/webapi/client

Server

Request 2

```
[
   {"age":24,"id":1,"name":"Ali"},
   {"age":45,"id":2,"name":"Mohamed"}
]
```

REST WS

Client

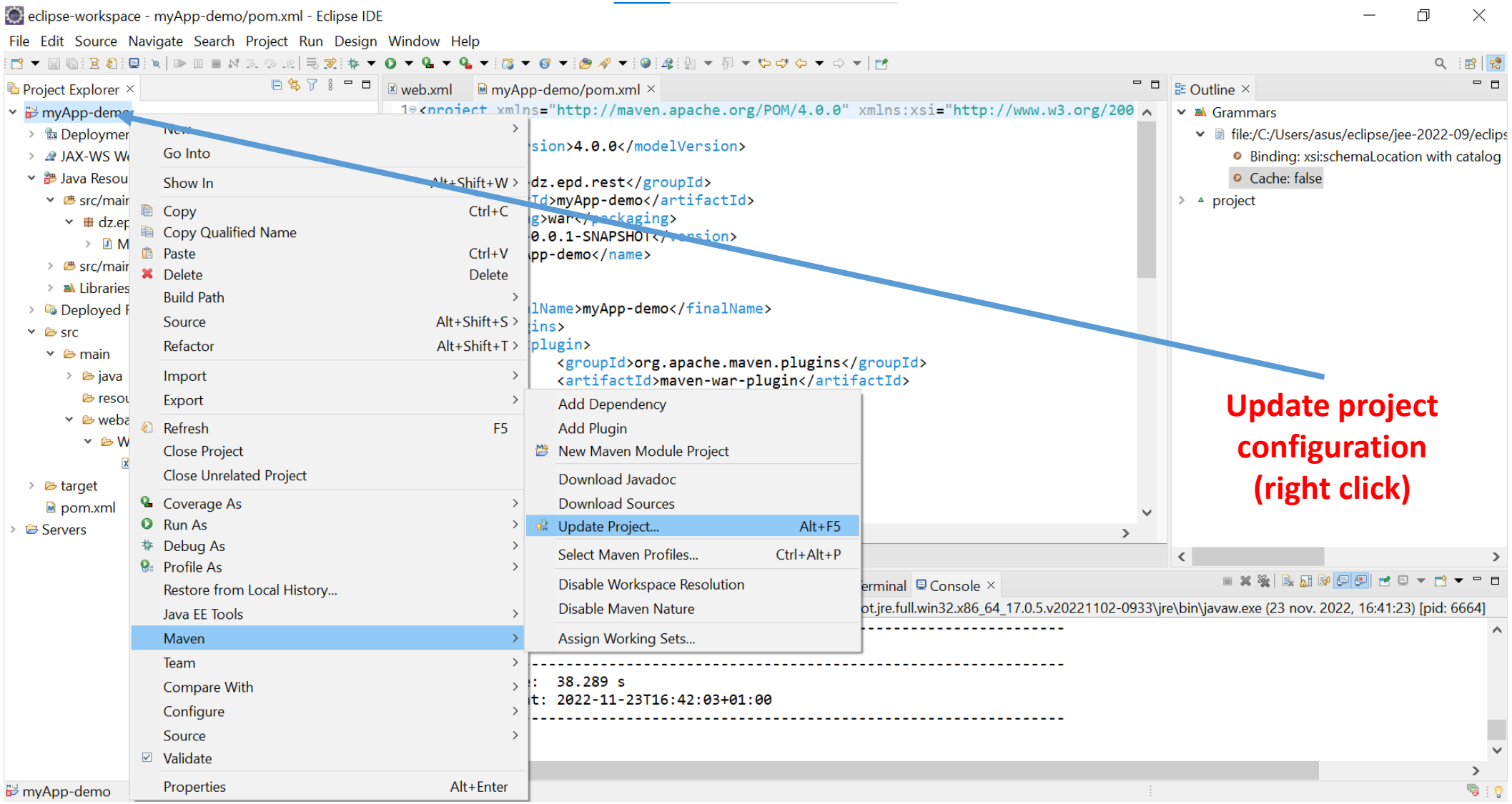
`GET http://localhost:8080/myApp-demo/webapi/client`

Server

Request 3

uncomment this line in the pom.xml file

```
<dependencies>
    <dependency>
        <groupId>org.glassfish.jersey.containers</groupId>
        <artifactId>jersey-container-servlet-core</artifactI
        <!-- use the following artifactId if you don't need
        <!-- artifactId>jersey-container-servlet</artifactId
    </dependency>
    <dependency>
        <groupId>org.glassfish.jersey.inject</groupId>
        <artifactId>jersey-hk2</artifactId>
    </dependency>

    <dependency>
        <groupId>org.glassfish.jersey.media</groupId>
        <artifactId>jersey-media-json-binding</artifactId>
    </dependency>

</dependencies>
```


eclipse-workspace - myApp-demo/pom.xml - Eclipse IDE
File Edit Source Navigate Search Project Run Design Window Help
Project Explorer
myApp-demo
Deployment
JAX-WS Web
Java Resou
src/main
dz.ep
M
src/main
Libraries
Deployed F
src
main
java
resou
weba
W
target
pom.xml
Servers
web.xml
myApp-demo/pom.xml
<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/200
sion>4.0.0</modelVersion>
dz.epd.rest</groupId>
Id>myApp-demo</artifactId>
g>war</packaging>
0.0.1-SNAPSHOT</version>
pp-demo</name>
lName>myApp-demo</finalName>
ins>
plugin>
<groupId>org.apache.maven.plugins</groupId>
<artifactId>maven-war-plugin</artifactId>
Outline
Grammars
file:/C:/Users/asus/eclipse/jee-2022-09/eclips
Binding: xsi:schemaLocation with catalog
Cache: false
project
Update project configuration (right click)
Go Into
Show In Alt+Shift+W
Copy Ctrl+C
Copy Qualified Name
Paste Ctrl+V
Delete Delete
Build Path
Source Alt+Shift+S
Refactor Alt+Shift+T
Import
Export
Refresh F5
Close Project
Close Unrelated Project
Coverage As
Run As
Debug As
Profile As
Restore from Local History...
Java EE Tools
Maven
Team
Compare With
Configure
Source
Validate
Properties Alt+Enter
Add Dependency
Add Plugin
New Maven Module Project
Download Javadoc
Download Sources
Update Project... Alt+F5
Select Maven Profiles... Ctrl+Alt+P
Disable Workspace Resolution
Disable Maven Nature
Assign Working Sets...
erminal
Console
ot.jre.full.win32.x86_64_17.0.5.v20221102-0933\jre\bin\javaw.exe (23 nov. 2022, 16:41:23) [pid: 6664]
38.289 s
t: 2022-11-23T16:42:03+01:00
myApp-demo

```java
package dz.epd.rest.myApp_demo;

public class Client {
    private int id;
    private String name;
    private int age;

    public Client() {}
        public Client(String name, int age) {
                this.name = name;
                this.age = age;
        }
        public int getId() {
                return id;
        }
        public void setId(int id) {
                this.id = id;
        }
        public String getName() {
                return name;
        }
        public void setName(String name) {
                this.name = name;
        }
        public int getAge() {
                return age;
        }
        public void setAge(int age) {
                this.age = age;
        }
}
```

let's create two classes for our business logic (Client management)

```java
package dz.epd.rest.myApp_demo;

import java.util.ArrayList;

public class ClientDAO {

        static ArrayList<Client> clientList = new ArrayList<Client>();
        static int id = 1;

        public static ArrayList<Client> getClientList() {
                        return clientList;
        }
        public static void addClientToList(Client client) {
                client.setId(id);
                id++;
                clientList.add(client);
        }
}
```

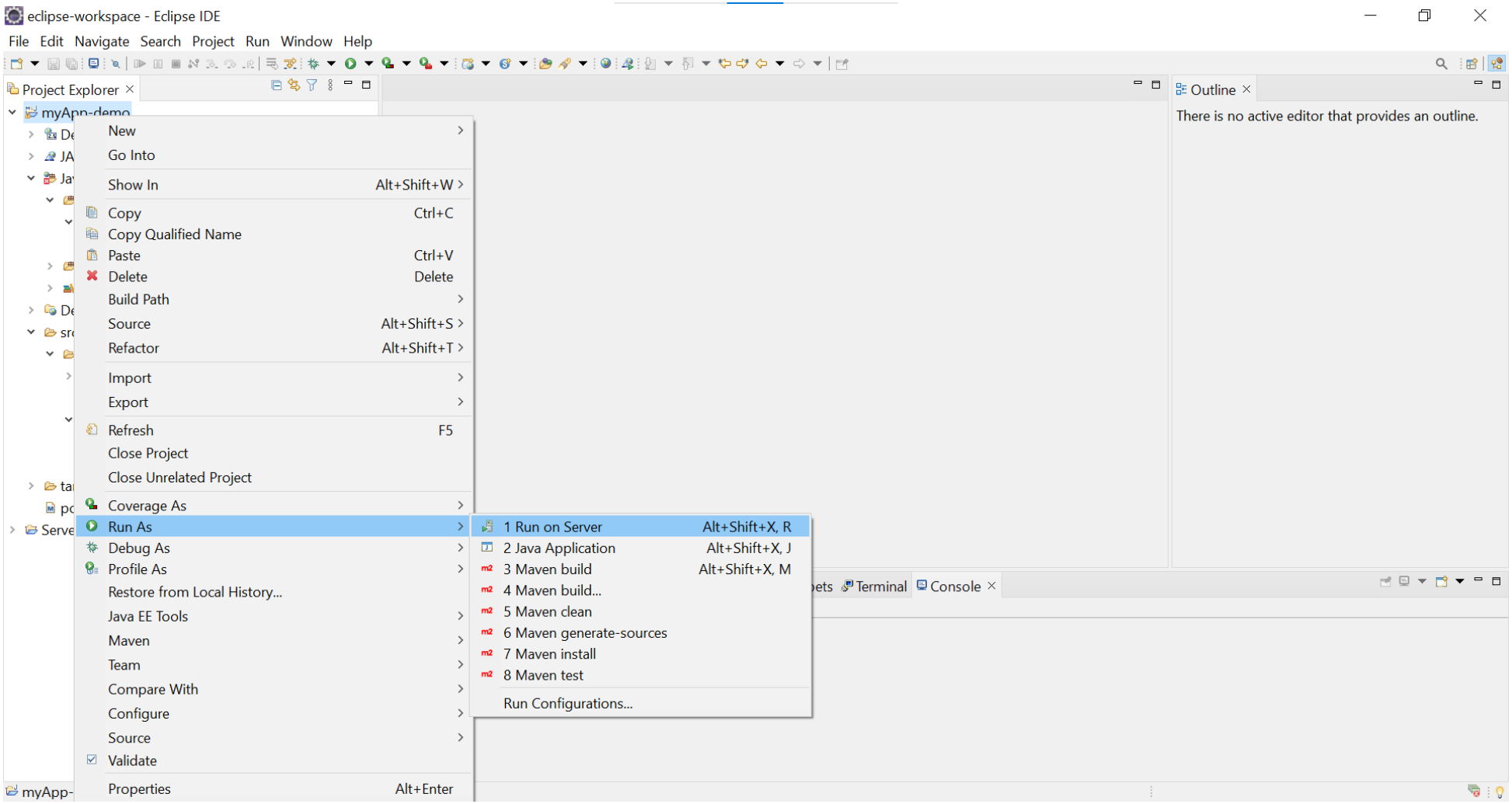
```java
package dz.epd.rest.myApp_demo;

import java.util.ArrayList;
import jakarta.ws.rs.Consumes;
import jakarta.ws.rs.GET;
import jakarta.ws.rs.POST;
import jakarta.ws.rs.Path;
import jakarta.ws.rs.Produces;
import jakarta.ws.rs.core.MediaType;

@Path("client")
public class ClientRessource {

    @GET
    @Produces(MediaType.APPLICATION_JSON)
    public ArrayList<Client> getClients() {
            return ClientDAO.getClientList();
    }

    @POST
    @Consumes(MediaType.APPLICATION_JSON)
    @Produces(MediaType.APPLICATION_JSON)
    public Client saveClient(Client clientObj) {
        System.out.println("Client id = " + clientObj.getId());
        System.out.println("Client name = " + clientObj.getName());
        System.out.println("Client age = " + clientObj.getAge());
        ClientDAO.addBusToList(clientObj);
        return clientObj;
    }
}
```

Let's create a REST web service that allows to save a new client or retrieve the list of available clients

@Produces = **Response**

Request and response are JSON files

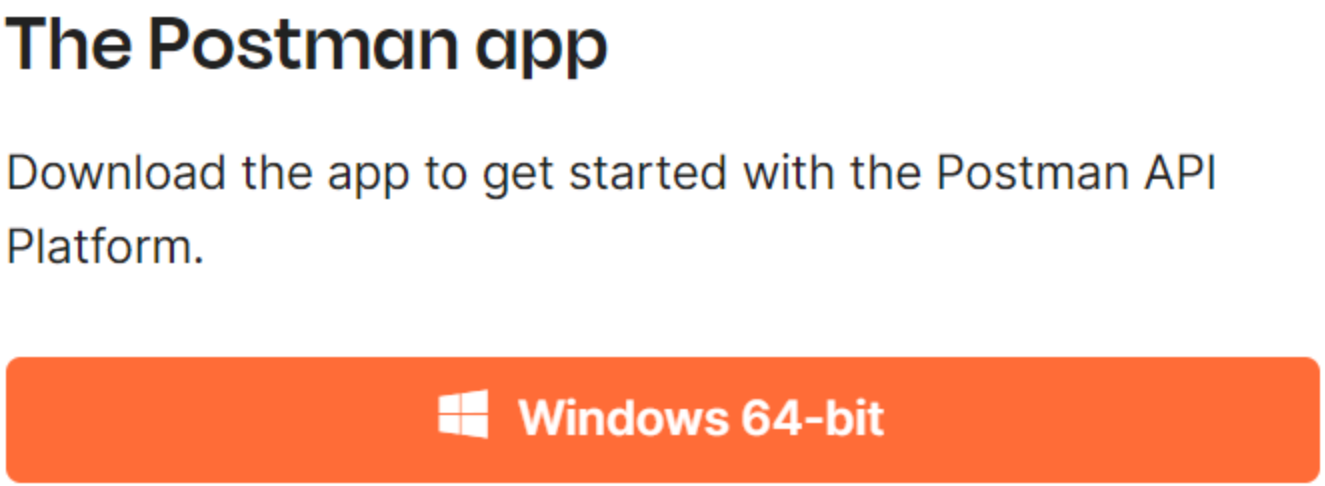
@ Consumes = **Request**


eclipse-workspace - Eclipse IDE
File Edit Navigate Search Project Run Window Help
Project Explorer
myApp-demo
Outline
There is no active editor that provides an outline.
Terminal
Console
New
Go Into
Show In Alt+Shift+W
Copy Ctrl+C
Copy Qualified Name
Paste Ctrl+V
Delete Delete
Build Path
Source Alt+Shift+S
Refactor Alt+Shift+T
Import
Export
Refresh F5
Close Project
Close Unrelated Project
Coverage As
Run As
Debug As
Profile As
Restore from Local History...
Java EE Tools
Maven
Team
Compare With
Configure
Source
Validate
Properties Alt+Enter
1 Run on Server Alt+Shift+X, R
2 Java Application Alt+Shift+X, J
3 Maven build Alt+Shift+X, M
4 Maven build...
5 Maven clean
6 Maven generate-sources
7 Maven install
8 Maven test
Run Configurations...

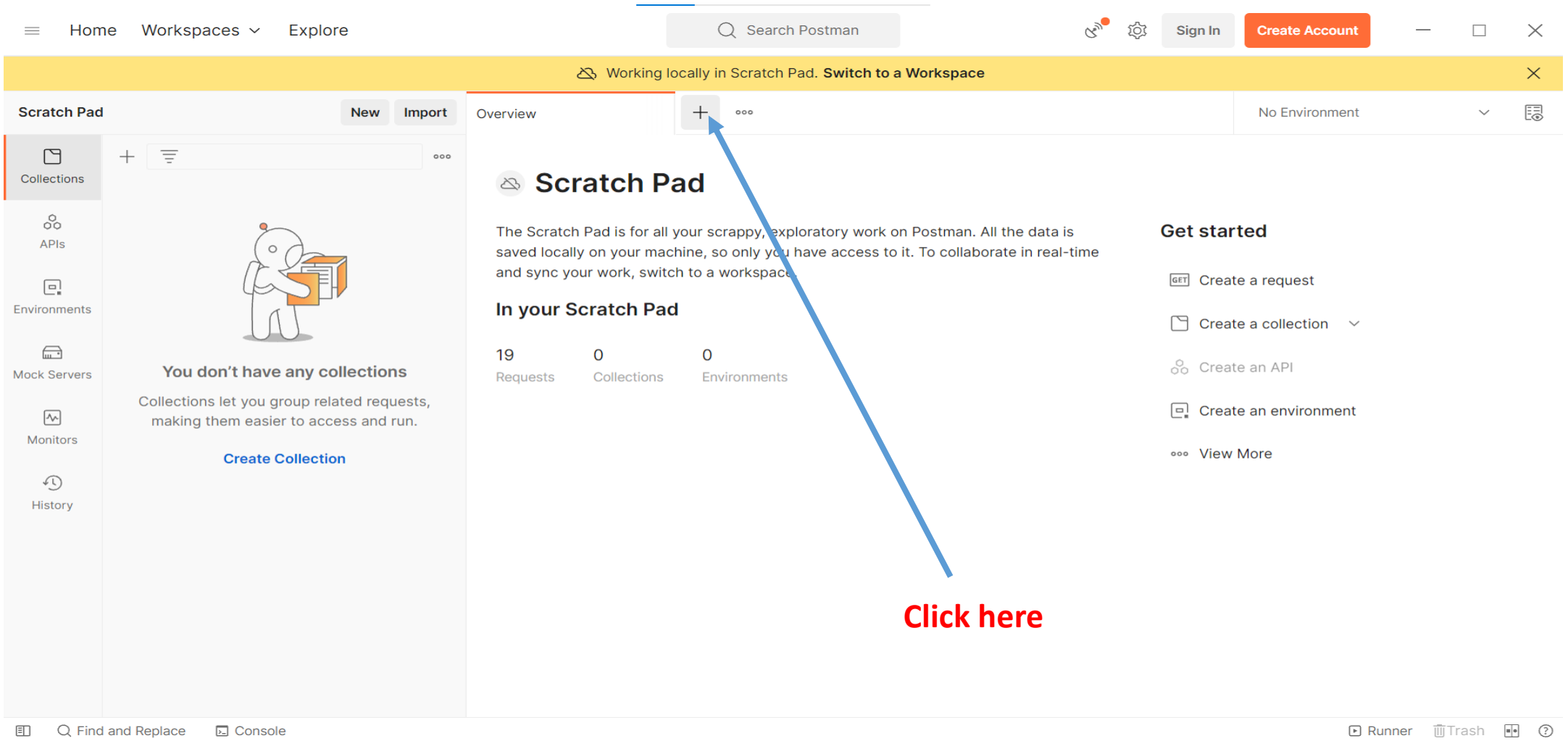
Part 3

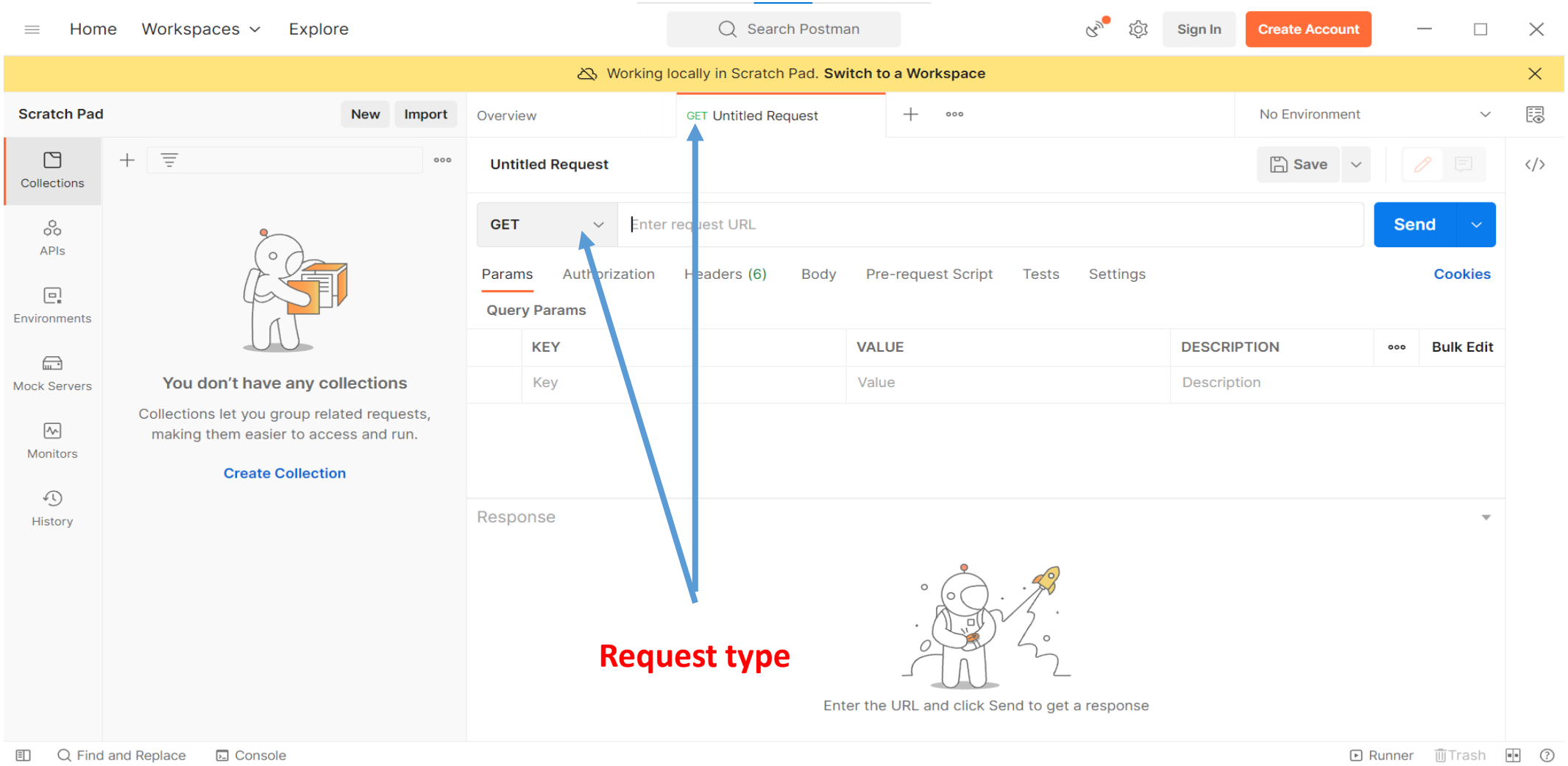
Let's go to getpostman.com and install Postman to test our REST API

Tools



https://www.postman.com/downloads/

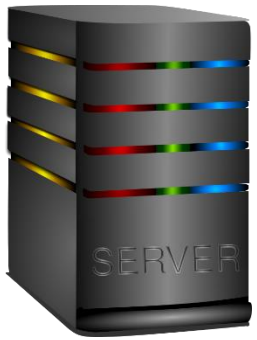

Home
Workspaces
Explore
Search Postman
Sign In
Create Account
Working locally in Scratch Pad. Switch to a Workspace
Scratch Pad
New
Import
Overview
No Environment
Collections
APIs
Environments
Mock Servers
Monitors
History
You don't have any collections
Collections let you group related requests, making them easier to access and run.
Create Collection
Scratch Pad
The Scratch Pad is for all your scrappy, exploratory work on Postman. All the data is saved locally on your machine, so only you have access to it. To collaborate in real-time and sync your work, switch to a workspace.
In your Scratch Pad
19
Requests
0
Collections
0
Environments
Get started
Create a request
Create a collection
Create an API
Create an environment
View More
Click here
Find and Replace
Console
Runner
Trash


Home
Workspaces
Explore
Search Postman
Sign In
Create Account
Working locally in Scratch Pad. Switch to a Workspace
Scratch Pad
New
Import
Overview
GET Untitled Request
No Environment
Collections
APIs
Environments
Mock Servers
Monitors
History
You don't have any collections
Collections let you group related requests, making them easier to access and run.
Create Collection
Untitled Request
Save
GET
Enter request URL
Send
Params
Authorization
Headers (6)
Body
Pre-request Script
Tests
Settings
Cookies
Query Params
KEY
VALUE
DESCRIPTION
Bulk Edit
Key
Value
Description
Response
Request type
Enter the URL and click Send to get a response
Find and Replace
Console
Runner
Trash

First, we will send a POST request …

```
{"id":1,
"name": "Ali",
"age" : 24}
```

REST WS

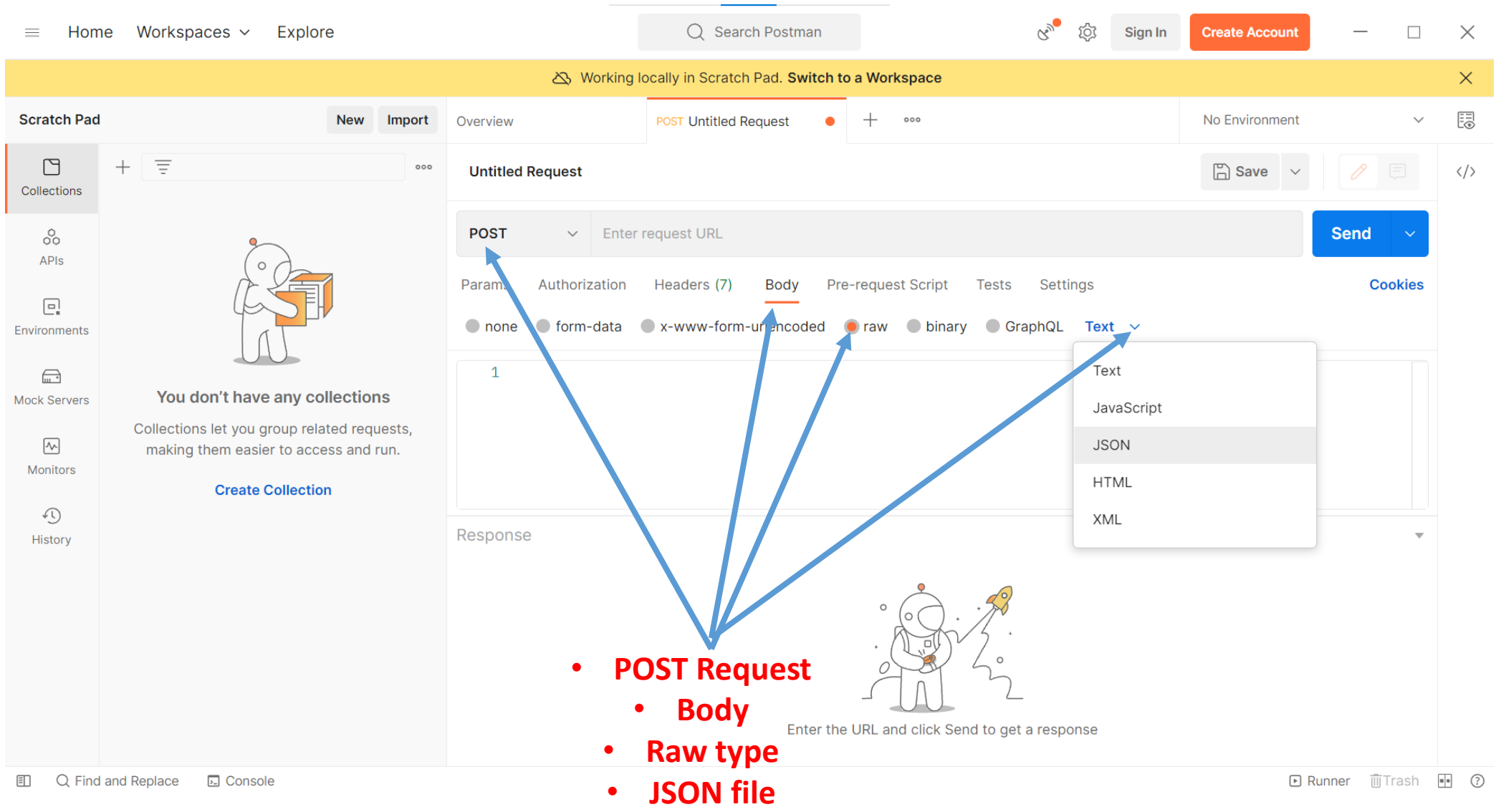


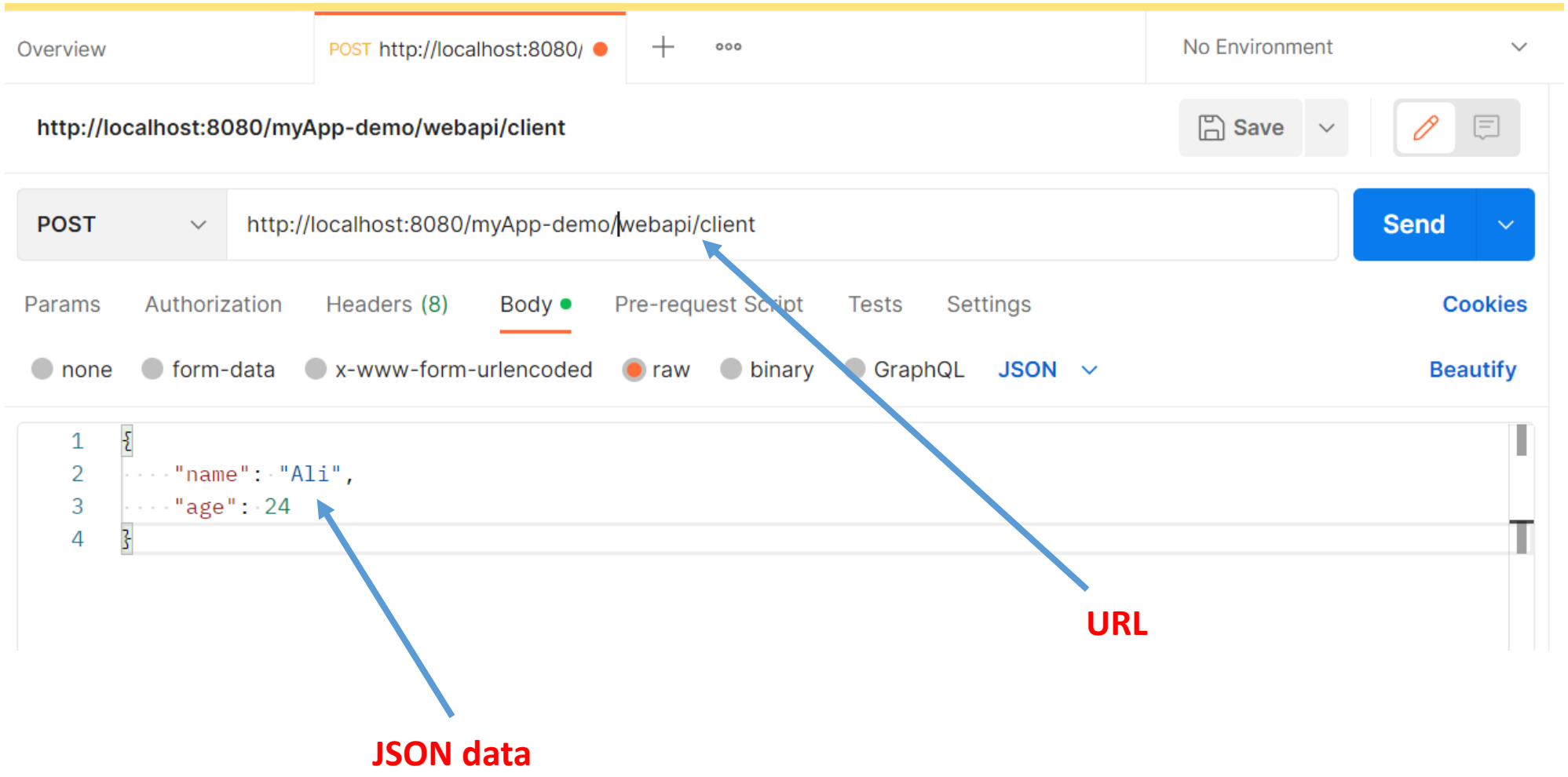

```
{"name": "Ali",
"Age" : 24}
```

POST http://localhost:8080/myApp-demo/webapi/client

Client

Server

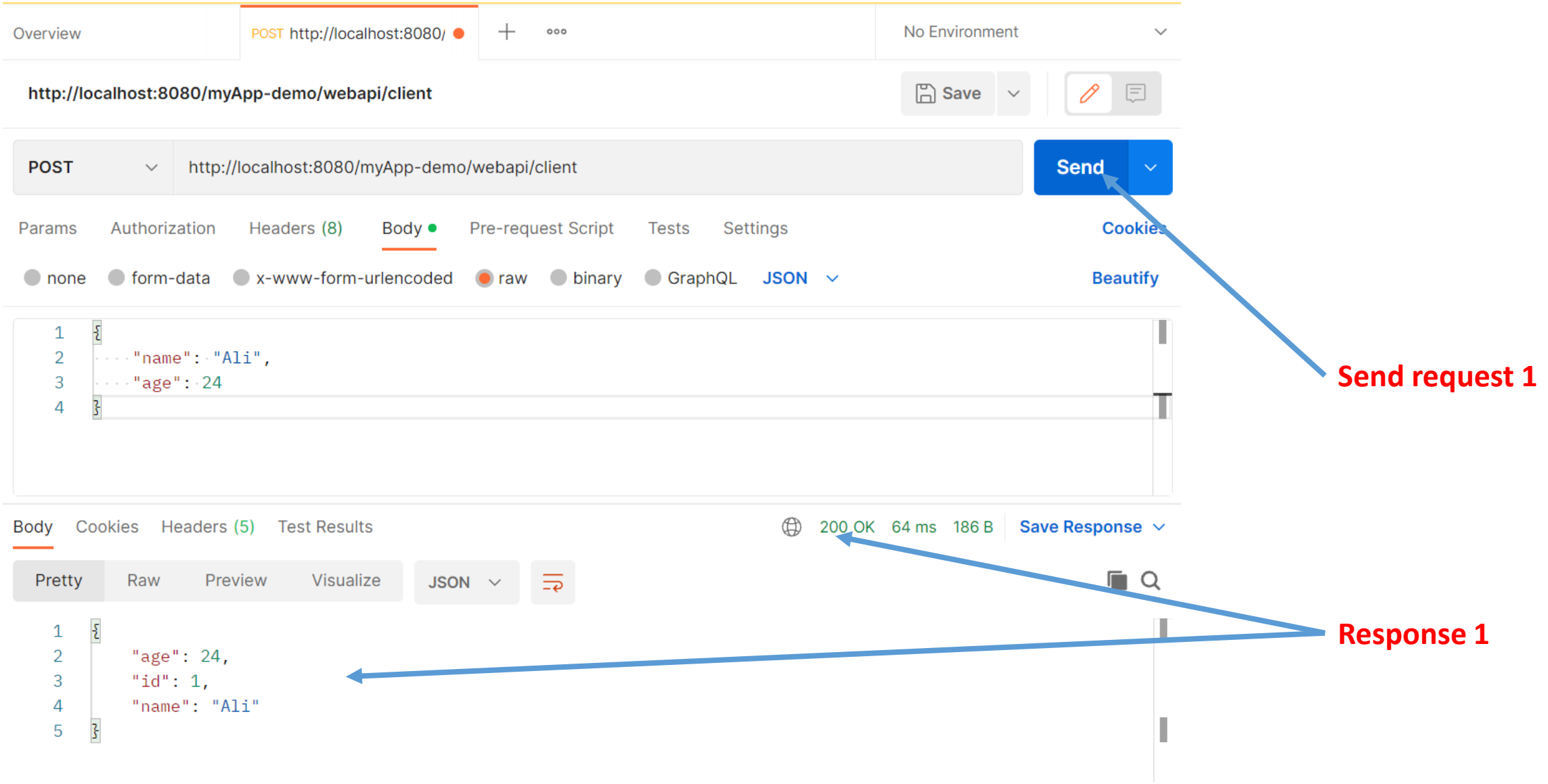

Home
Workspaces
Explore
Search Postman
Sign In
Create Account
Working locally in Scratch Pad. Switch to a Workspace
Scratch Pad
New
Import
Overview
POST Untitled Request
No Environment
Collections
APIs
Environments
Mock Servers
Monitors
History
You don't have any collections
Collections let you group related requests, making them easier to access and run.
Create Collection
Untitled Request
Save
POST
Enter request URL
Send
Params
Authorization
Headers (7)
Body
Pre-request Script
Tests
Settings
Cookies
none
form-data
x-www-form-urlencoded
raw
binary
GraphQL
Text
1
Text
JavaScript
JSON
HTML
XML
Response
Enter the URL and click Send to get a response
Find and Replace
Console
Runner
Trash
• POST Request
• Body
• Raw type
• JSON file

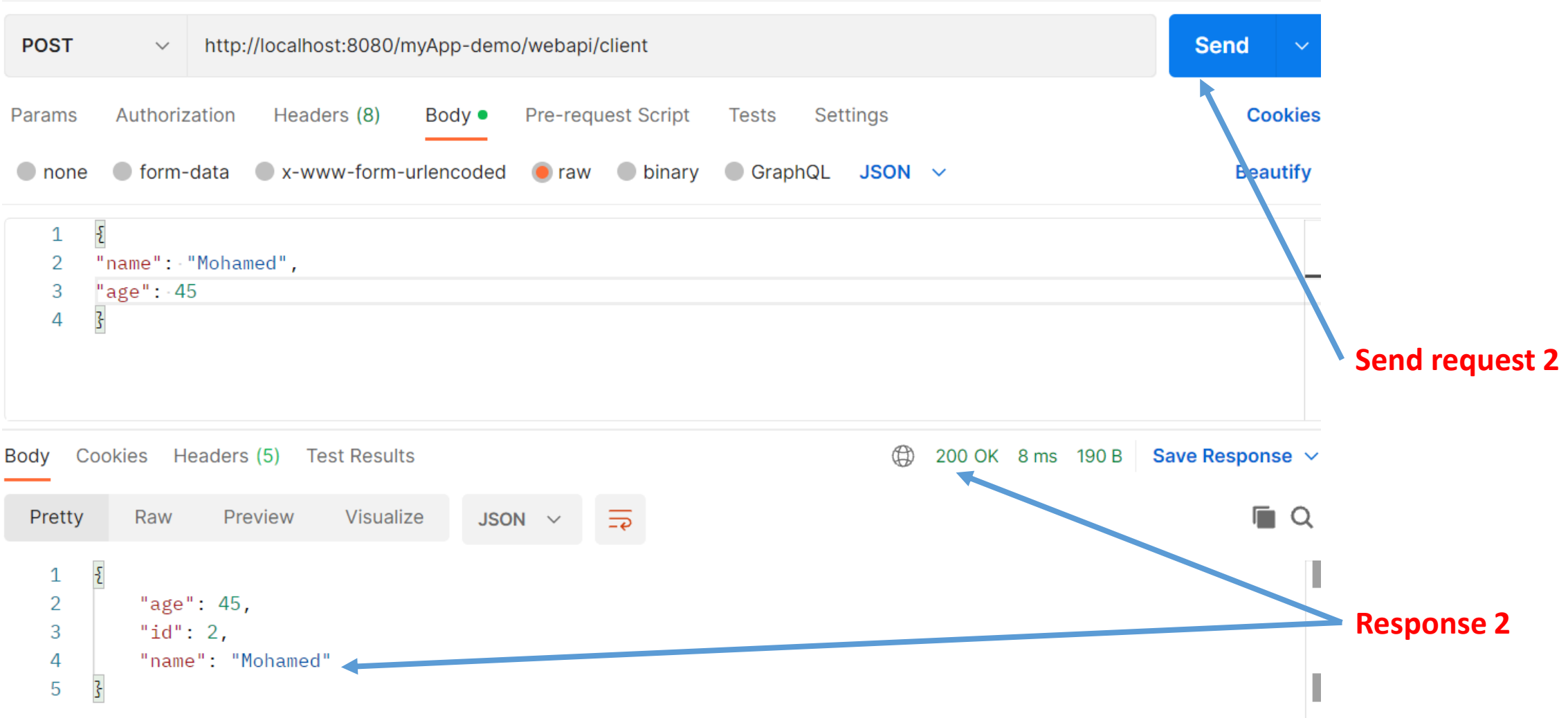

Overview
POST http://localhost:8080/
No Environment
http://localhost:8080/myApp-demo/webapi/client
Save
POST
http://localhost:8080/myApp-demo/webapi/client
Send
Params
Authorization
Headers (8)
Body
Pre-request Script
Tests
Settings
Cookies
none
form-data
x-www-form-urlencoded
raw
binary
GraphQL
JSON
Beautify
1 {
2 "name": "Ali",
3 "age": 24
4 }
URL
JSON data

```
@Path("client")
public class ClientRessource {

    @GET
    @Produces(MediaType.APPLICATION_JSON)
    public ArrayList<Client> getClients() {
            return ClientDAO.getClientList();
    }

    @POST
    @Consumes(MediaType.APPLICATION_JSON)
    @Produces(MediaType.APPLICATION_JSON)
    public Client saveClient(Client clientObj) {
        System.out.println("Client id = " +
clientObj.getId());
        System.out.println("Client name = " +
clientObj.getName());
        System.out.println("Client age = " +
clientObj.getAge());
        ClientDAO.addBusToList(clientObj);
        return clientObj;
    }
}
```

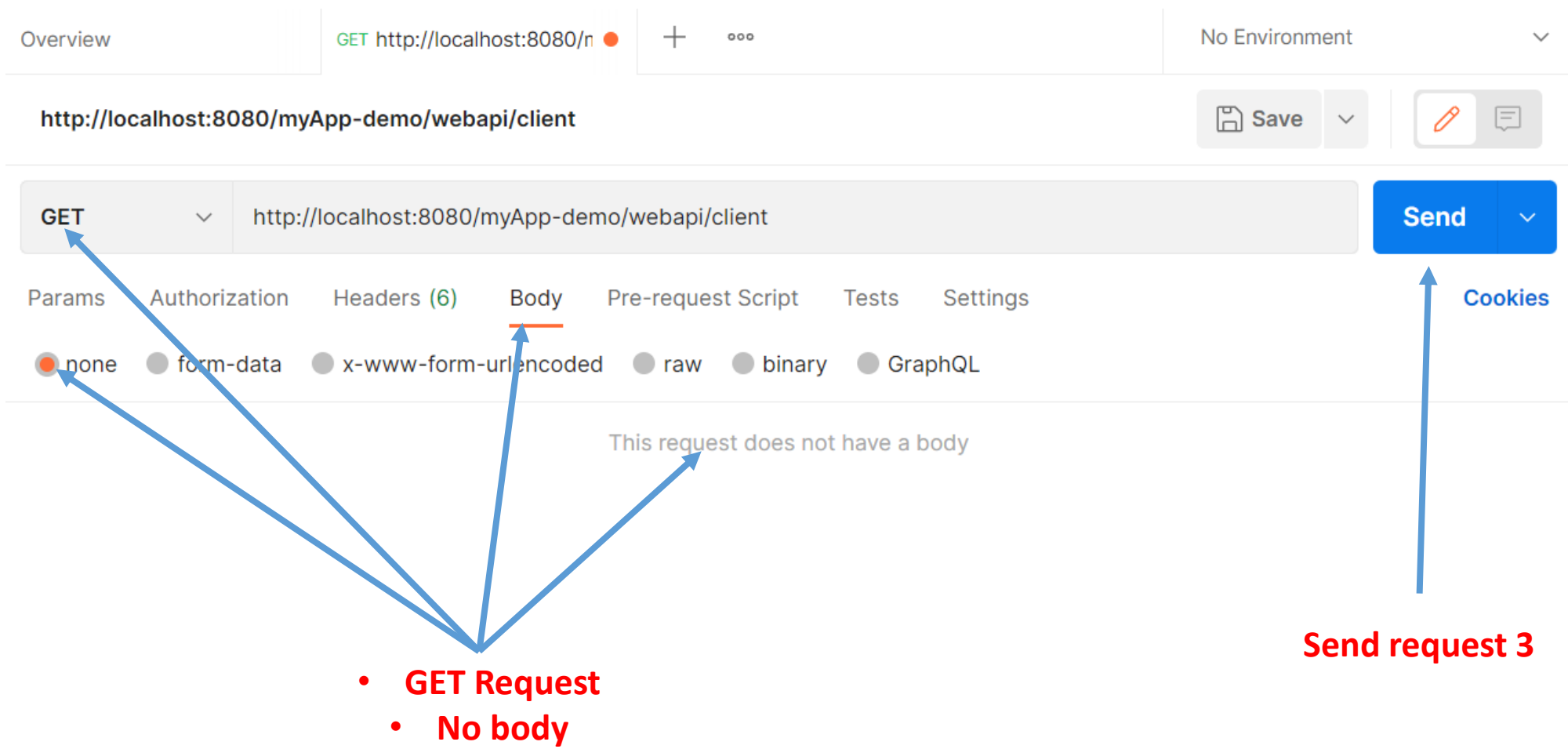
URL

http://localhost:8080/myApp-demo/webapi/client


Overview
POST http://localhost:8080/
No Environment
http://localhost:8080/myApp-demo/webapi/client
Save
POST
http://localhost:8080/myApp-demo/webapi/client
Send
Params
Authorization
Headers (8)
Body
Pre-request Script
Tests
Settings
Cookies
none
form-data
x-www-form-urlencoded
raw
binary
GraphQL
JSON
Beautify
{
"name": "Ali",
"age": 24
}
Send request 1
Body
Cookies
Headers (5)
Test Results
200 OK
64 ms
186 B
Save Response
Pretty
Raw
Preview
Visualize
JSON
{
"age": 24,
"id": 1,
"name": "Ali"
}
Response 1


POST
http://localhost:8080/myApp-demo/webapi/client
Send
Params
Authorization
Headers (8)
Body
Pre-request Script
Tests
Settings
Cookies
none
form-data
x-www-form-urlencoded
raw
binary
GraphQL
JSON
Beautify
{
"name": "Mohamed",
"age": 45
}
Send request 2
Body
Cookies
Headers (5)
Test Results
200 OK
8 ms
190 B
Save Response
Pretty
Raw
Preview
Visualize
JSON
{
"age": 45,
"id": 2,
"name": "Mohamed"
}
Response 2

Next, we will send a GET request...


Overview
GET http://localhost:8080/n
No Environment
http://localhost:8080/myApp-demo/webapi/client
Save
GET
http://localhost:8080/myApp-demo/webapi/client
Send
Params
Authorization
Headers (6)
Body
Pre-request Script
Tests
Settings
Cookies
none
form-data
x-www-form-urlencoded
raw
binary
GraphQL
This request does not have a body
• GET Request
• No body
Send request 3

Body Cookies Headers (5) Test Results 200 OK 12 ms 223 B Save Response

Pretty Raw Preview Visualize JSON


```
[
    {
        "age": 24,
        "id": 1,
        "name": "Ali"
    },
    {
        "age": 45,
        "id": 2,
        "name": "Mohamed"
    }
]
```


Response 3
(list of clients)

Documentation

for more information …

https://eclipse-ee4j.github.io/jersey.github.io/documentation/latest3x/jaxrs-resources.html