

Web technologies: software installation guide

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1 Software requirements

Download the following software packages:

Windows & OS X & Linux:

- Eclipse IDE for Java Enterprise developers: <https://www.eclipse.org/downloads/packages/>
- Apache Tomcat 9: <http://tomcat.apache.org/whichversion.html>
- Choose the latest stable release of Apache Tomcat 9:
https://en.wikipedia.org/wiki/Apache_Tomcat#Releases
 - Note: At the moment Apache Tomcat 10 is not compatible with some libraries necessary for the course.
- MySQL connector: <https://dev.mysql.com/downloads/connector/j/> “Platform Independent (Architecture Independent), ZIP or TAR Archive”.

Windows & OS X only:

- Oracle JDK, last version: <https://www.oracle.com/technetwork/java/javase/downloads/index.html>
- MySQL Community server: <http://dev.mysql.com/downloads/mysql/>
 - For windows user: click on “Go to Download Page” to download MySQL installer
 - Note: MySQL Installer is 32 bit but will install both 32-bit and 64-bit binaries.
- MySQL Workbench: <http://dev.mysql.com/downloads/workbench/>

2 Installation

2.1 Installing the latest JRE and JDK

The Java installation guide for all platforms can be found here:

<https://docs.oracle.com/en/java/javase/15/install/overview-jdk-installation.html>

2.1.1 Windows

Go to the Java SE download page, download the installer and run it as in Figure 1.

<https://www.oracle.com/technetwork/java/javase/downloads/index.html>

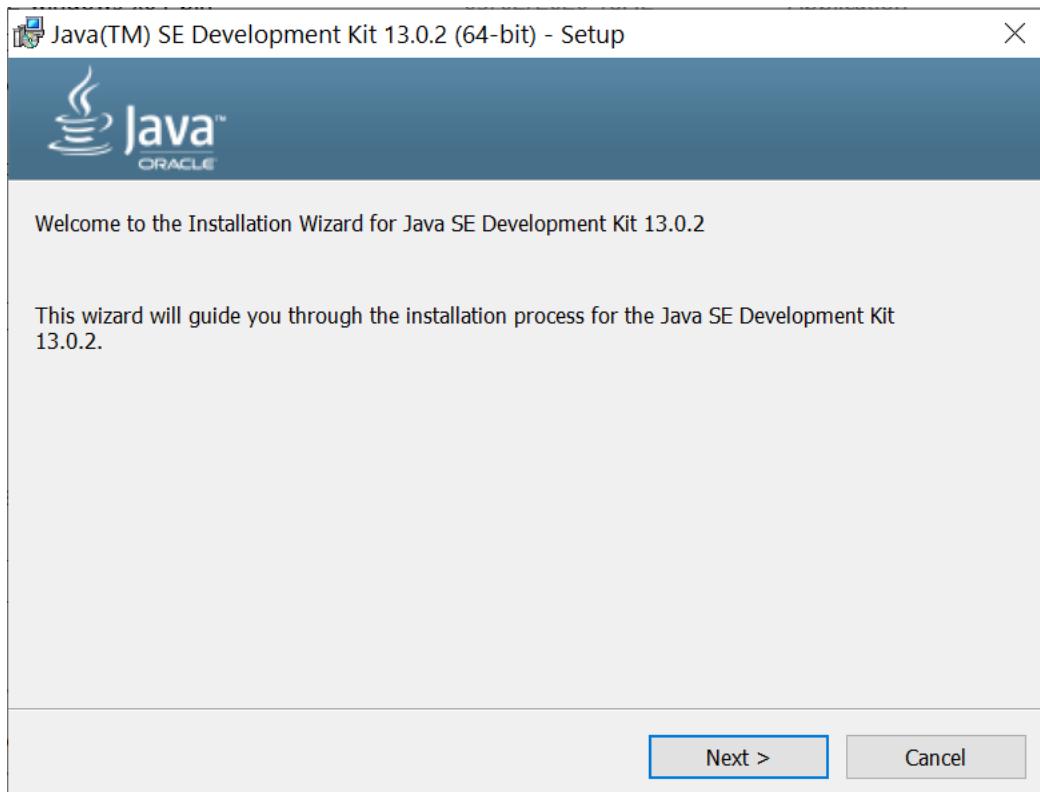


Figure 1: JDK installation wizard

Set the windows environment variables, as explained e.g., here:

<https://stackoverflow.com/questions/1672281/environment-variables-for-java-installation>

When using Java SE version 13 or more, you don't need to set the JRE_HOME variable.

An example of environment variables is:

JAVA_HOME: C:\Program Files\Java\jdk-13.0.2

JDK_HOME: %JAVA_HOME%

CLASSPATH: .;%JAVA_HOME%\lib

Modify the PATH variable by adding the %JAVA_HOME%\bin to the already existing ones in your PC

PATH: *your-unique-entries*;%JAVA_HOME%\bin

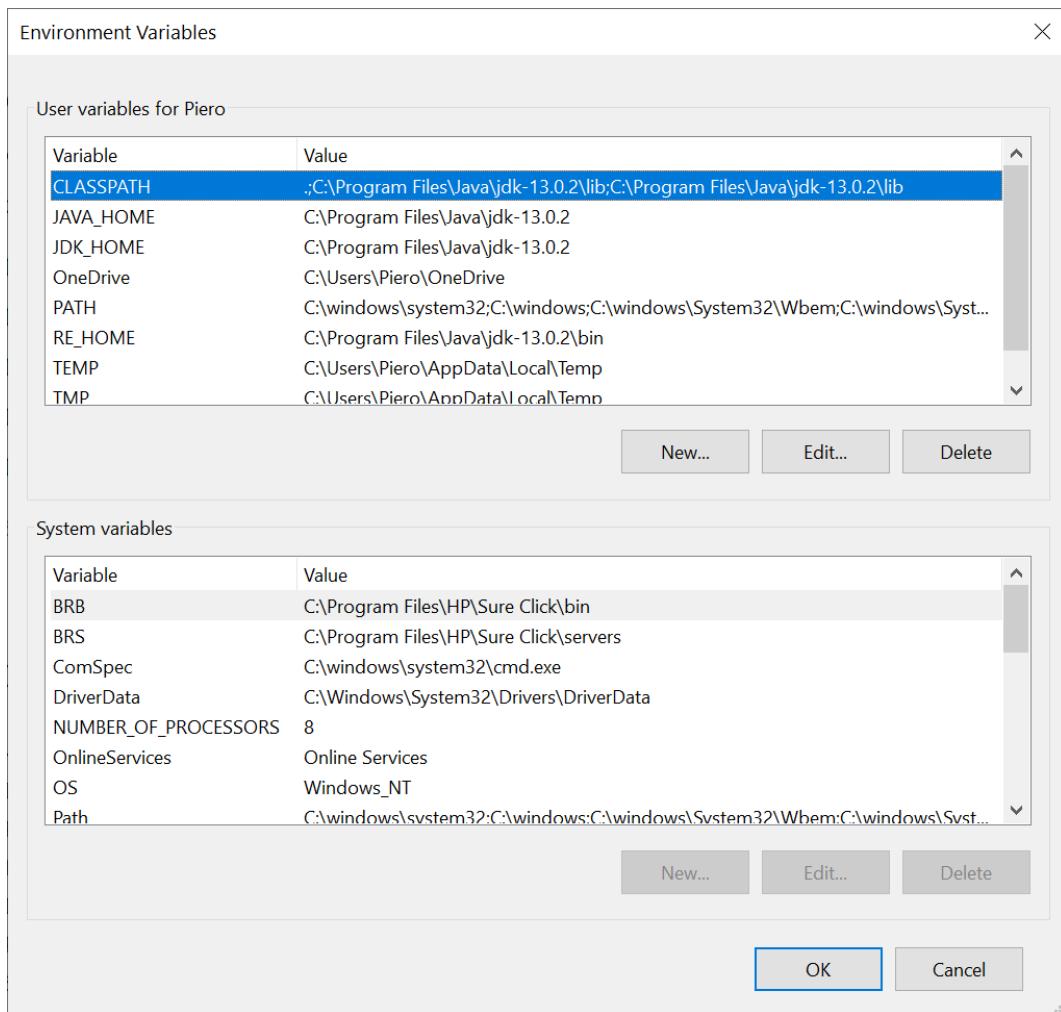


Figure 2: setting Windows environment variables

2.1.2 OS X

Download package and install as in Figure 3.

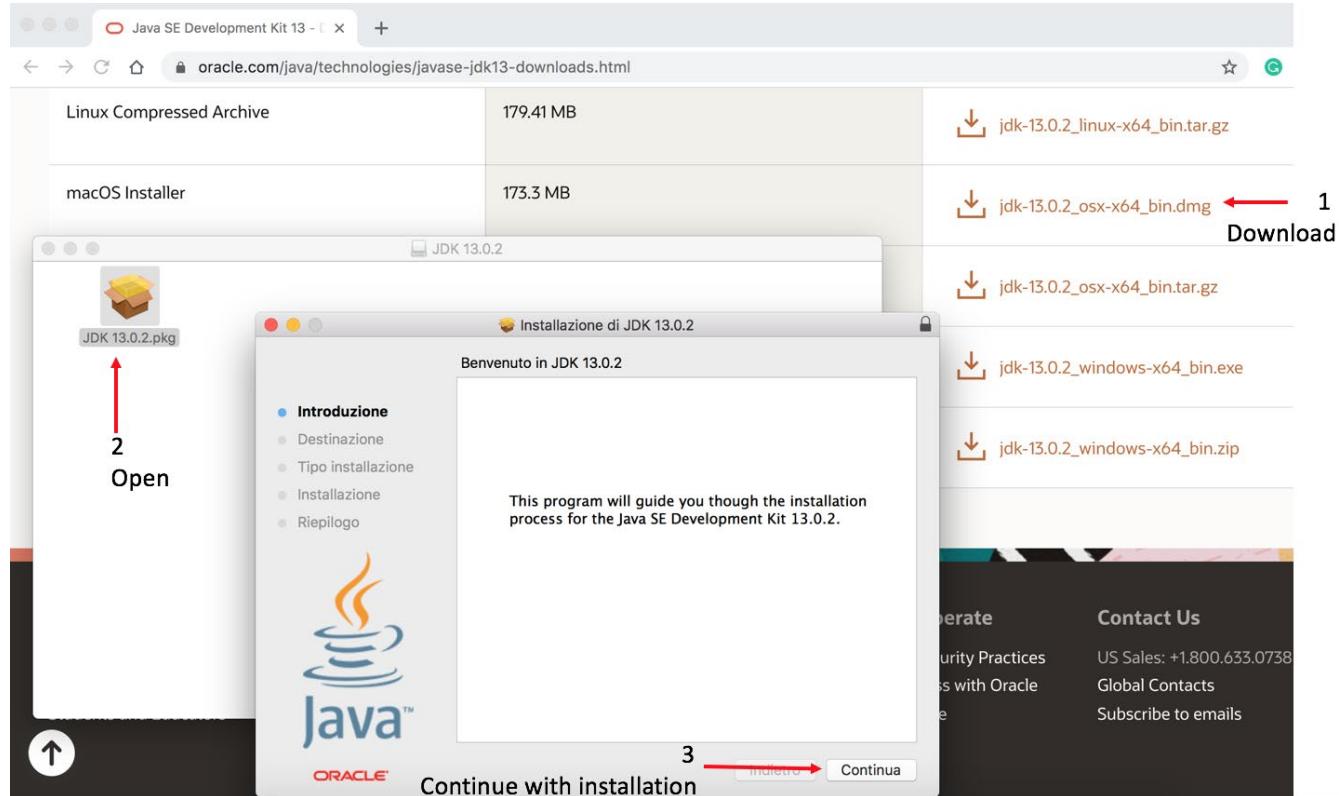


Figure 3: Installing the Oracle JDK in OS X

2.1.3 Linux

In the remainder of this guide, we will indicate with Linux any Debian-based distribution. Please notice that the provided instructions have been tested on the latest Ubuntu Linux LTS release.

You need to add the `linuxuprising/java` third-party repository. Open a terminal and execute the following commands:

```
sudo add-apt-repository ppa:linuxuprising/java  
sudo apt update
```

Then, to Install the Oracle JDK, execute:

```
sudo apt install oracle-java15-installer
```

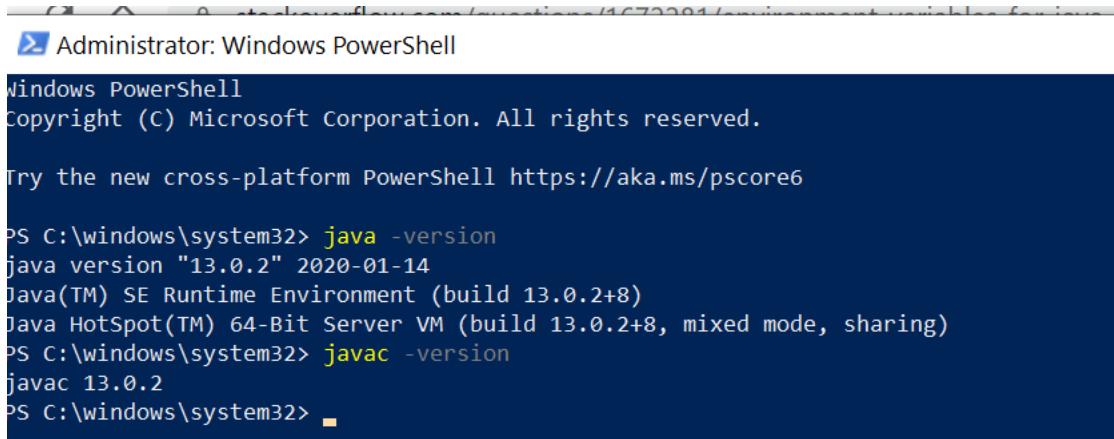
You will be prompted a message to confirm the Oracle license terms & agreement, accept them (use the tab button to navigate the options), and continue.

2.1.4 Check if everything went fine

At the end of the Java installation process, open a terminal (Linux, OS X) or a command prompt (Windows) and type:

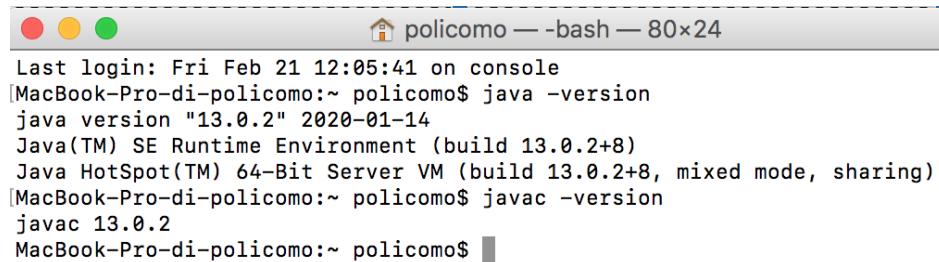
```
java -version  
javac -version
```

If everything went fine, the reported JRE and JDK versions should match the ones you just installed (or had already installed).



```
Administrator: Windows PowerShell  
Windows PowerShell  
Copyright (C) Microsoft Corporation. All rights reserved.  
Try the new cross-platform PowerShell https://aka.ms/pscore6  
PS C:\windows\system32> java -version  
java version "13.0.2" 2020-01-14  
Java(TM) SE Runtime Environment (build 13.0.2+8)  
Java HotSpot(TM) 64-Bit Server VM (build 13.0.2+8, mixed mode, sharing)  
PS C:\windows\system32> javac -version  
javac 13.0.2  
PS C:\windows\system32>
```

Figure 4: checking the version of Java in Windows



```
policomo — bash — 80x24  
Last login: Fri Feb 21 12:05:41 on console  
[MacBook-Pro-di-policomo:~ policomo$ java -version  
java version "13.0.2" 2020-01-14  
Java(TM) SE Runtime Environment (build 13.0.2+8)  
Java HotSpot(TM) 64-Bit Server VM (build 13.0.2+8, mixed mode, sharing)  
[MacBook-Pro-di-policomo:~ policomo$ javac -version  
javac 13.0.2  
MacBook-Pro-di-policomo:~ policomo$
```

Figure 5: checking the version of Java in Mac OS

2.2 Installing Eclipse

For all platforms:

- Download the .zip or .tar.gz file. At the end of the download process, extract the content of file you downloaded. You will end up with an eclipse folder that can be placed wherever you like on your computer. To start Eclipse, just double-click on the Eclipse executable.

For Windows:

- Download the installation wizard and launch it (requires internet connection).

For Mac:

- Open the .dmg and in the appearing window move Eclipse to the Applications folder

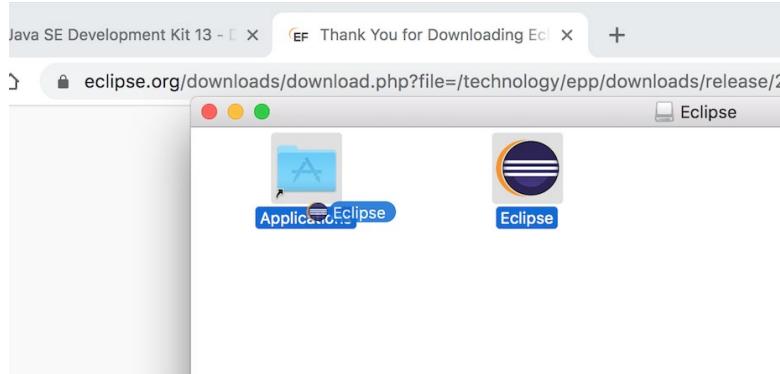


Figure 6: Move Eclipse to Apps folder

For Linux:

- Extract the content of the .tar.gz using the command:
tar -zxvf yourEclipsefile.tar.gz
- Navigate to the extracted eclipse folder, execute the eclipse application.

2.3 Installing Tomcat

Windows:

- After unzipping, copy the Tomcat folder into your favorite drive (e.g., C: or D:)
- Launch the Tomcat Java Web server by executing the “Tomcat9.exe” file in the extracted Tomcat folder, e.g: C:\Program Files\Apache Software Foundation\Tomcat 9.0\bin

```
[C:\Program Files\Apache Software Foundation\Tomcat 9.0\webapps\sample.war]
06-Feb-2020 09:31:30.468 WARNING [main] org.apache.catalina.util.SessionIdGeneratorBase.createSecureRandom Creation of SecureRandom instance for session ID generation using [SHA1PRNG] took [207] milliseconds.
06-Feb-2020 09:31:30.527 INFO [main] org.apache.catalina.startup.HostConfig.deployWAR Deployment of web application archive [C:\Program Files\Apache Software Foundation\Tomcat 9.0\webapps\sample.war] has finished in [586] ms
06-Feb-2020 09:31:30.528 INFO [main] org.apache.catalina.startup.HostConfig.deployDirectory Deploying web application directory [C:\Program Files\Apache Software Foundation\Tomcat 9.0\webapps\docs]
06-Feb-2020 09:31:30.577 INFO [main] org.apache.catalina.startup.HostConfig.deployDirectory Deployment of web application directory [C:\Program Files\Apache Software Foundation\Tomcat 9.0\webapps\docs] has finished in [45] ms
06-Feb-2020 09:31:30.577 INFO [main] org.apache.catalina.startup.HostConfig.deployDirectory Deploying web application directory [C:\Program Files\Apache Software Foundation\Tomcat 9.0\webapps\examples]
06-Feb-2020 09:31:30.995 INFO [main] org.apache.catalina.startup.HostConfig.deployDirectory Deployment of web application directory [C:\Program Files\Apache Software Foundation\Tomcat 9.0\webapps\examples] has finished in [418] ms
06-Feb-2020 09:31:30.998 INFO [main] org.apache.catalina.startup.HostConfig.deployDirectory Deploying web application directory [C:\Program Files\Apache Software Foundation\Tomcat 9.0\webapps\host-manager]
06-Feb-2020 09:31:31.050 INFO [main] org.apache.catalina.startup.HostConfig.deployDirectory Deployment of web application directory [C:\Program Files\Apache Software Foundation\Tomcat 9.0\webapps\host-manager] has finished in [51] ms
06-Feb-2020 09:31:31.050 INFO [main] org.apache.catalina.startup.HostConfig.deployDirectory Deploying web application directory [C:\Program Files\Apache Software Foundation\Tomcat 9.0\webapps\manager]
06-Feb-2020 09:31:31.103 INFO [main] org.apache.catalina.startup.HostConfig.deployDirectory Deployment of web application directory [C:\Program Files\Apache Software Foundation\Tomcat 9.0\webapps\manager] has finished in [57] ms
06-Feb-2020 09:31:31.108 INFO [main] org.apache.catalina.startup.HostConfig.deployDirectory Deploying web application directory [C:\Program Files\Apache Software Foundation\Tomcat 9.0\webapps\ROOT]
06-Feb-2020 09:31:31.145 INFO [main] org.apache.catalina.startup.HostConfig.deployDirectory Deployment of web application directory [C:\Program Files\Apache Software Foundation\Tomcat 9.0\webapps\ROOT] has finished in [37] ms
06-Feb-2020 09:31:31.156 INFO [main] org.apache.coyote.AbstractProtocol.start Starting ProtocolHandler ["http-nio-8080"]
06-Feb-2020 09:31:31.170 INFO [main] org.apache.coyote.AbstractProtocol.start Starting ProtocolHandler ["ajp-nio-8009"]
06-Feb-2020 09:31:31.187 INFO [main] org.apache.catalina.startup.Catalina.start Server startup in [1,333] milliseconds
```

Figure 7 the console of the Tomcat Java web server

- Open a browser and type the address: <http://localhost:8080>

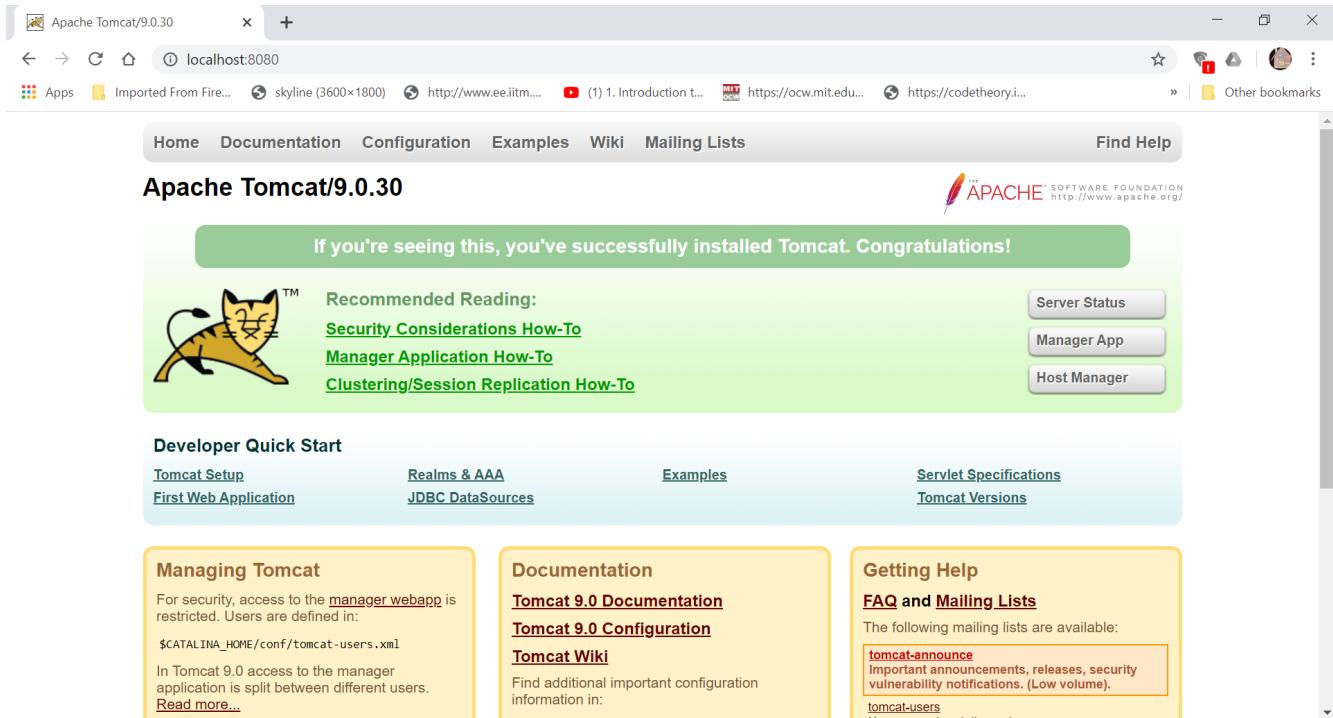


Figure 8: the welcome page of the Tomcat Java Web server

OS X

- After unzipping, rename the folder to Tomcat and copy the folder into the /Applications folder
- Move to Applications/Tomcat/bin and run the command `./startup.sh`

```
bin — -bash — 80x24
[MacBook-Pro-di-policomodo:bin policomodo$ pwd
/Applications/Tomcat/bin
[MacBook-Pro-di-policomodo:bin policomodo$ ./startup.sh
Using CATALINA_BASE:   /Applications/Tomcat
Using CATALINA_HOME:   /Applications/Tomcat
Using CATALINA_TMPDIR: /Applications/Tomcat/temp
Using JRE_HOME:        /Library/Java/JavaVirtualMachines/jdk-13.0.2.jdk/Contents
/Home
Using CLASSPATH:       /Applications/Tomcat/bin/bootstrap.jar:/Applications/Tomcat/bin/tomcat-juli.jar
Tomcat started.
```

Figure 9: the console of the Tomcat Java web server

- Open a browser and type the address: <http://localhost:8080>. Check Figure 8 above.
- To stop the service, execute `./shutdown.sh`

Note: It is possible that some of the scripts you need to execute do not have the execution permissions. If that is the case, you need to execute from the console:

```
sudo chmod +x scriptname.sh
```

Or to all scripts in the folder: `sudo chmod +x Tomcat/bin/*.sh`

Linux

- Extract the content of the downloaded tomcat file (e.g., tar xzf apache-tomcat-9.0.16.tar.gz) by opening a Terminal and typing:

```
tar xzf apache-tomcat-version_number.tar.gz
```

- Navigate to the extracted folder:

```
cd apache-tomcat-{version_number}
```

- Start the tomcat server:

```
./startup.sh
```

- Open a browser and type the address: <http://localhost:8080>. Check Figure 8 above.
- To stop the service, execute ./shutdown.sh

2.4 Installing MySQL Server & Workbench

Windows

Install MySQL Community and MySQL Workbench, accepting all the default configurations and executing the steps necessary for installing possibly missing prerequisite packages. Be sure to store the root password in a safe and protected place. By default, MySQL is launched as a service at startup.

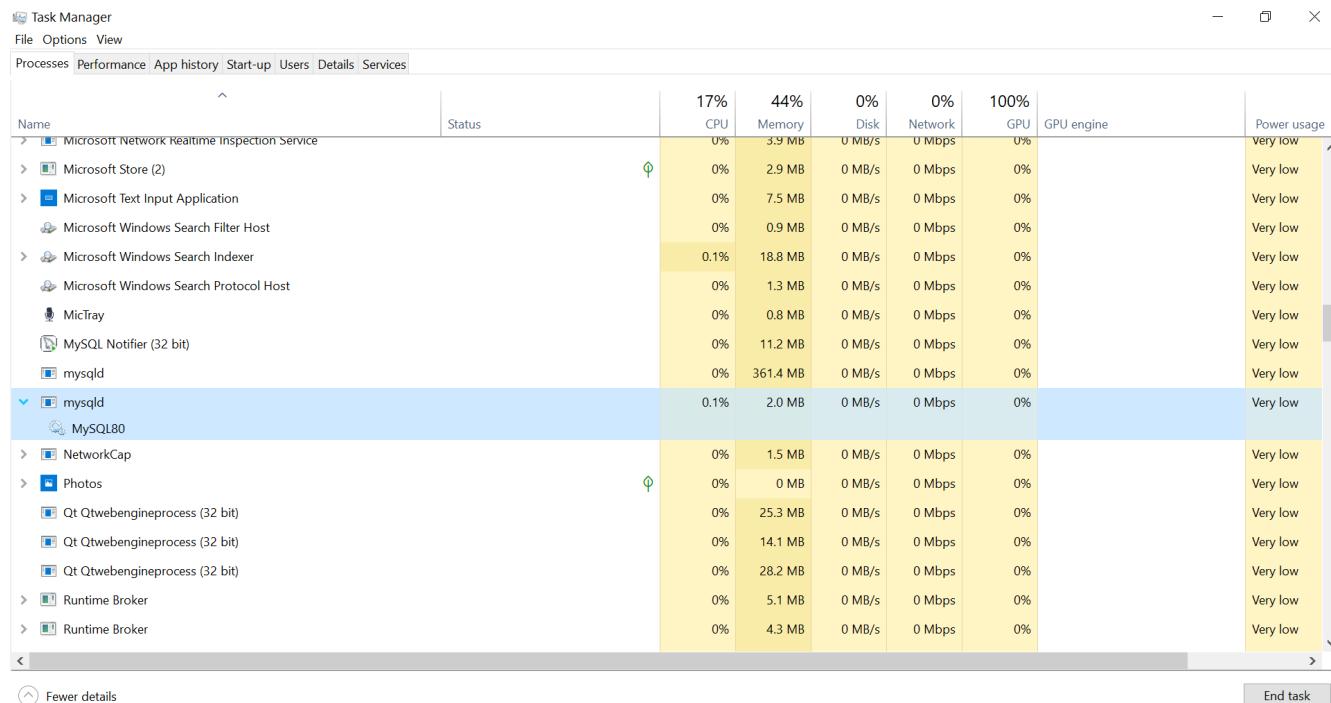


Figure 10: checking that the MySQL service is running in the Control Panel -> Administrative Tools -> Services

Open the workbench and check the status of the server.

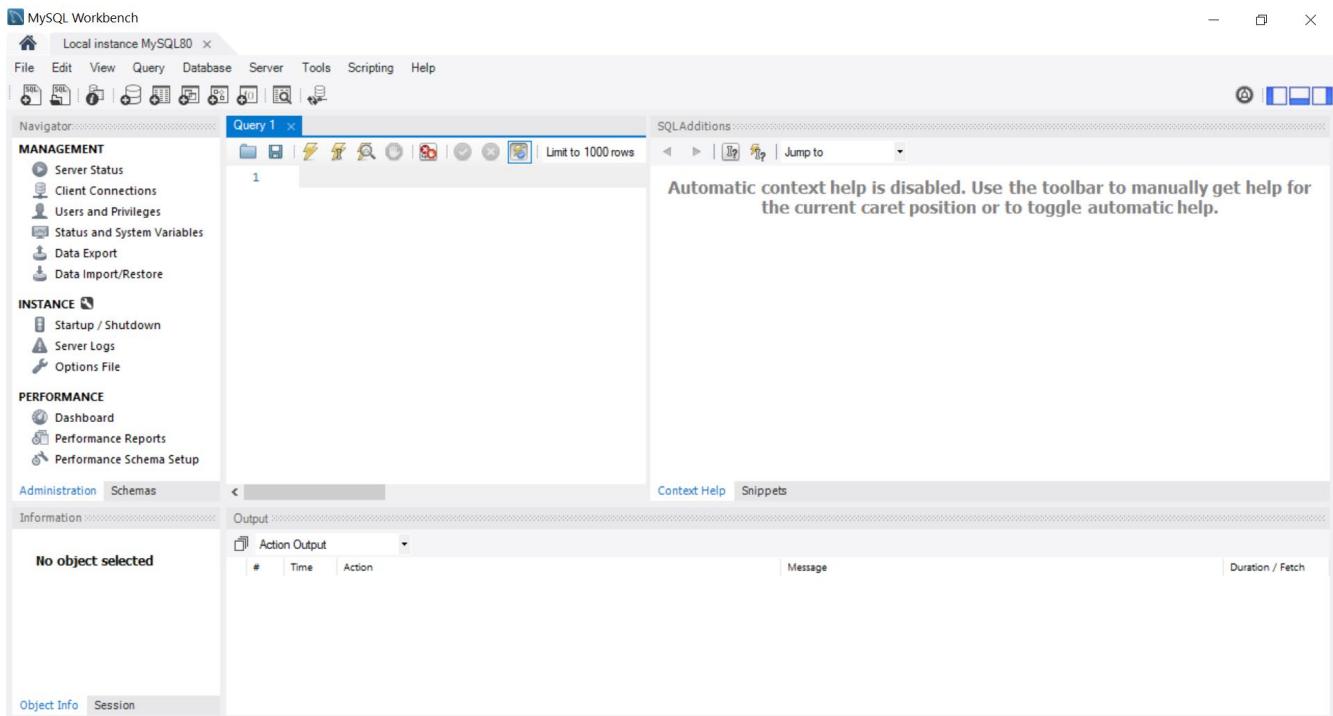


Figure 11: checking the server status in MySQL Workbench

OS X

- Install MySQL Community with all default configurations

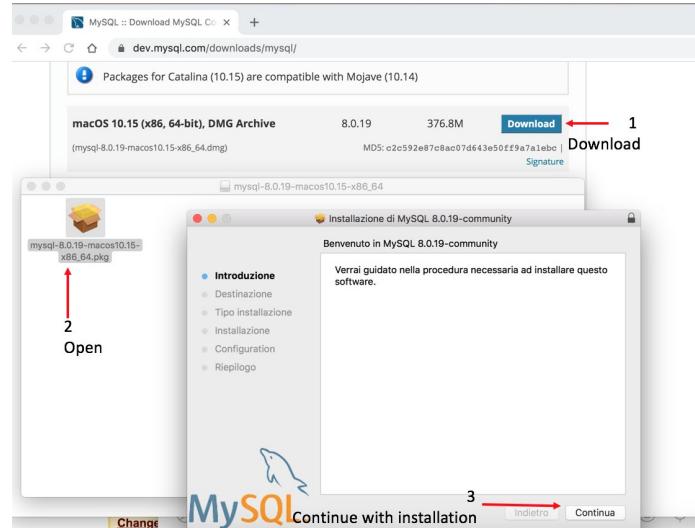


Figure 12 Installing MySQL in OS X

- When password is required insert one. Be sure to store the root password in a safe and protected place.

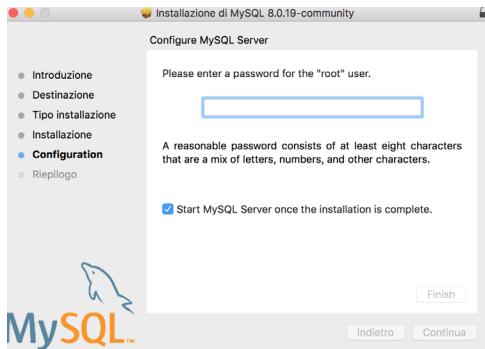


Figure 13 Installing MySQL in OS X

- MySQL Workbench open the .dmg and move the MySQL workbench to the Applications Folder (depending on your OS X version you might need to install an older version).

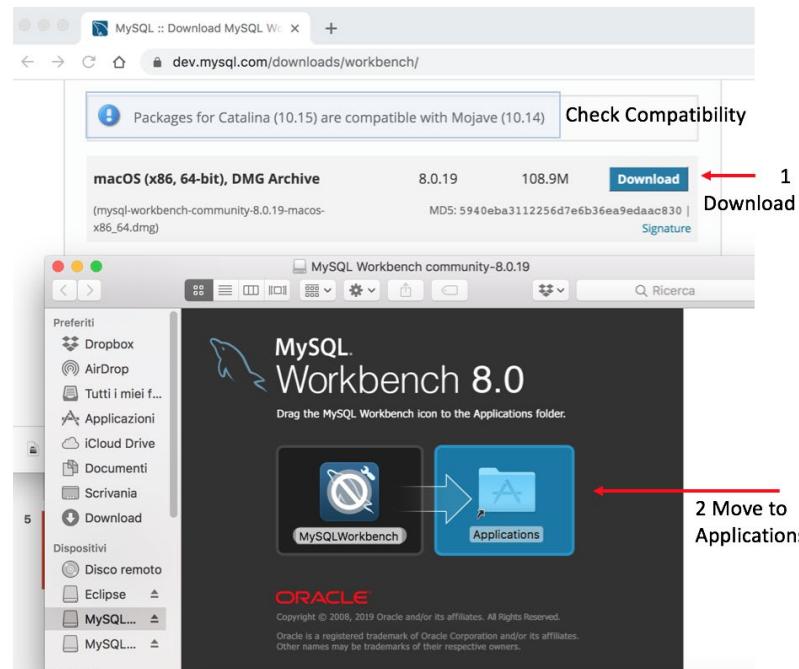


Figure 14 Installing MySQL Workbench in OS X

- Install MySQL Community and MySQL Workbench. After installing MySQL Workbench, open a terminal and type:

```
sudo ln -s /Applications/MySQLWorkbench.app/Contents/MacOS/mysqldump
/usr/local/bin/mysqldump
```

Linux

Open a terminal and type:

```
sudo apt-get install mysql-server mysql-workbench
```

During the installation you will be prompted to provide a password for the root user of the sql server, remember the password and store it in a safe and protected place.

If the installation does not ask you to set the root password, you can follow this guide to set it (where you have to replace *my_new_pass* with the password of your choice):

<https://askubuntu.com/a/1133325>

Once installation is completed, the service will start automatically, and the MySQL Workbench application will be available in the app drawer. To verify the status of the service, execute the following:

```
sudo systemctl status mysql
```

2.4.1 Starting MySQL Server

Depending on the operating system, it is possible to start/stop the database as follows:

Windows

Configure at installation MySQL to start as a service at system start-up and use the workbench to check the server status and work with the server.

OSX

Open System Preferences and select MySQL. Clicking on the Start MySQL Server button will cause the MySQL server to start. (If it doesn't appear automatically after MySQL installation try by restarting the computer).

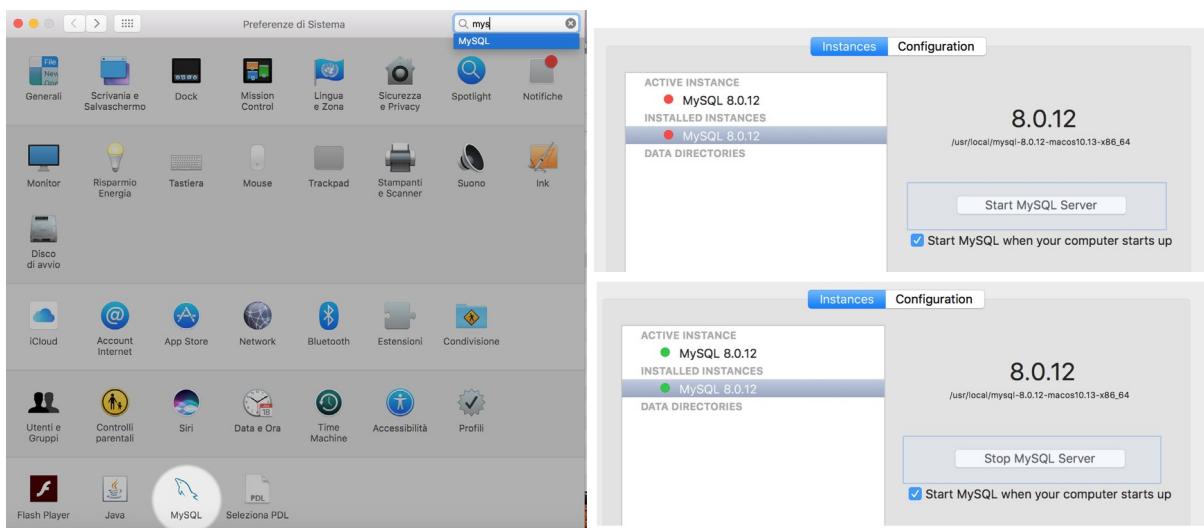


Figure 15 Start/Stop MySQL in Mac OS X

Linux:

By default the server starts at boot time. If you wish to remove mysql-server from the startup, open a terminal and type

```
sudo update.rc-d mysql disable.
```

You can start and stop the server by using, respectively:

```
sudo service mysql start  
sudo service mysql stop
```

3 Configuration

3.1 Setting up the latest JDK with Eclipse

Open Eclipse. Go to the menu Preferences:

Windows: Window > Preferences

OS X: Eclipse > Preferences

Linux: Window > Preferences

Select the entry Java > Installed JREs

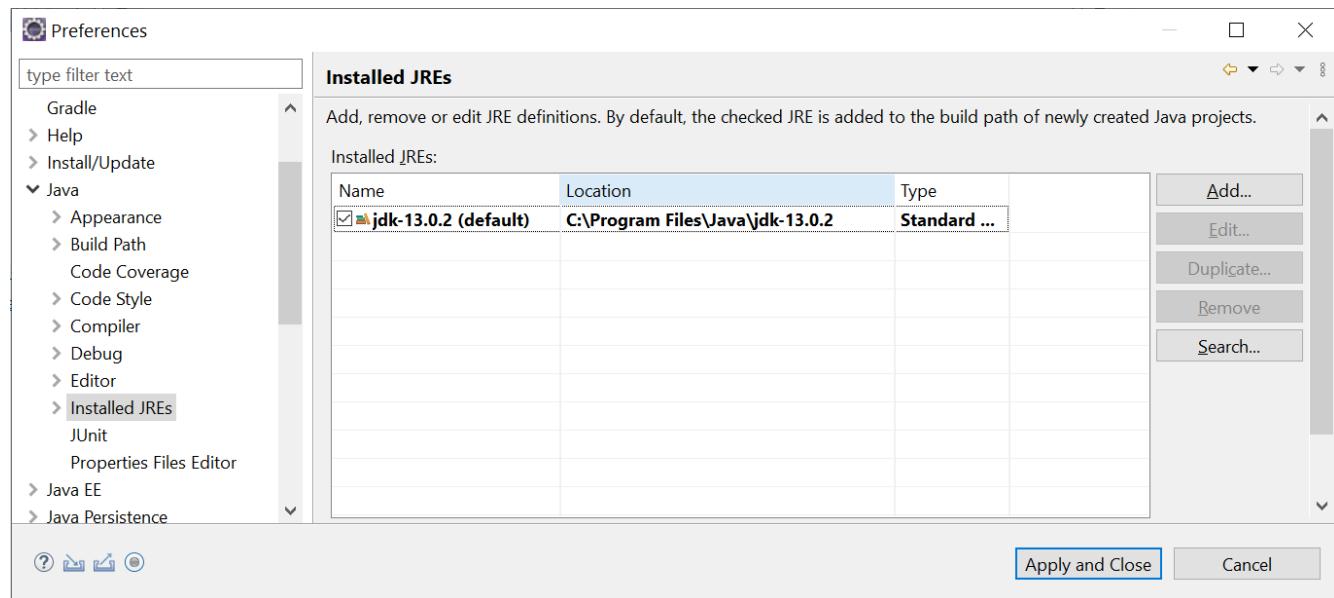


Figure 16 Checking the installed JREs in Eclipse

If Eclipse failed to automatically detect the presence of the JRE proceeds as follows.

Press the button Add. Then, select MacOS X VM (Mac) or Standard VM (Windows, Linux). Finally, specify the location of the JDK installed in your PC.

Example path for JDK in MacOS X:

/Library/Java/JavaVirtualMachines/jdk-13.0.2.jdk/Contents/Home

3.2 Adding Tomcat to Eclipse

Open Eclipse. Go to the menu Preferences:

Windows: Window > Preferences

OS X: Eclipse > Preferences

Linux: Window > Preferences

Select the entry Server > Runtime Environments. Press the button Add.

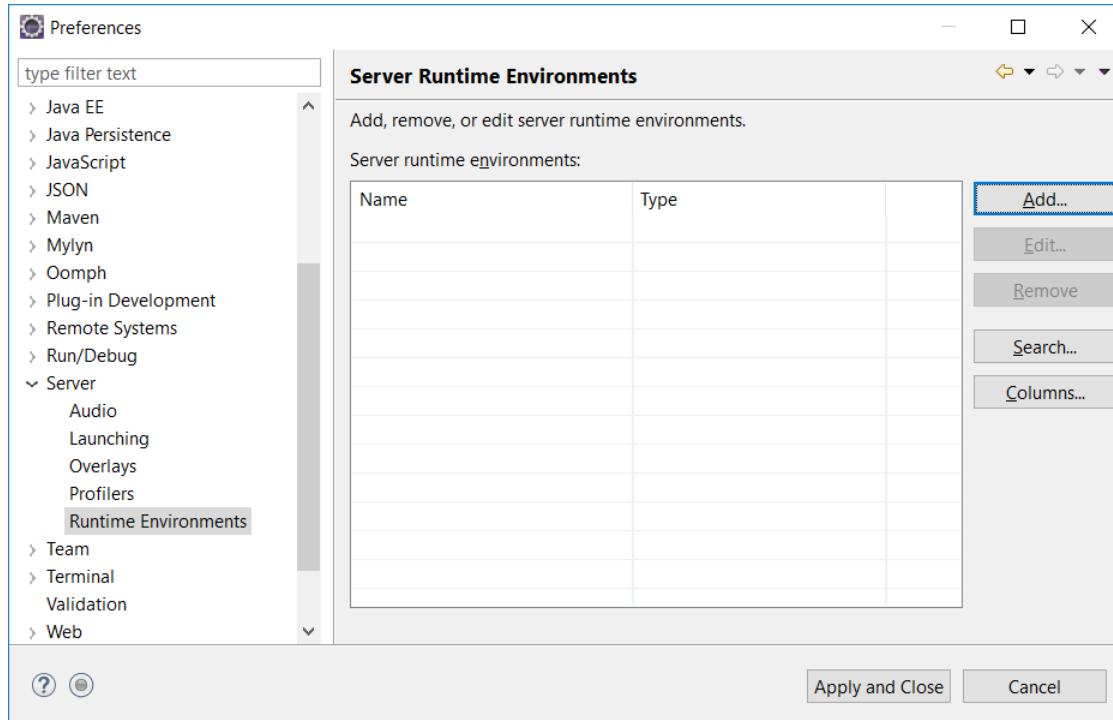


Figure 17 adding a runtime environment for Tomcat

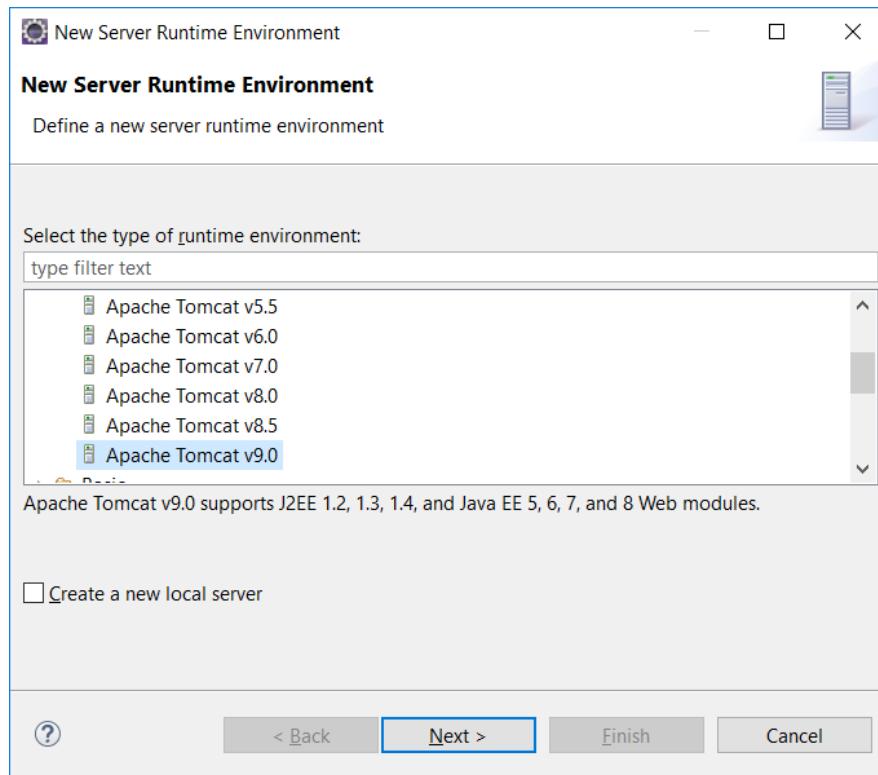


Figure 18 selecting the installed version of Tomcat

Select the path of the Tomcat folder on your system and press Finish.

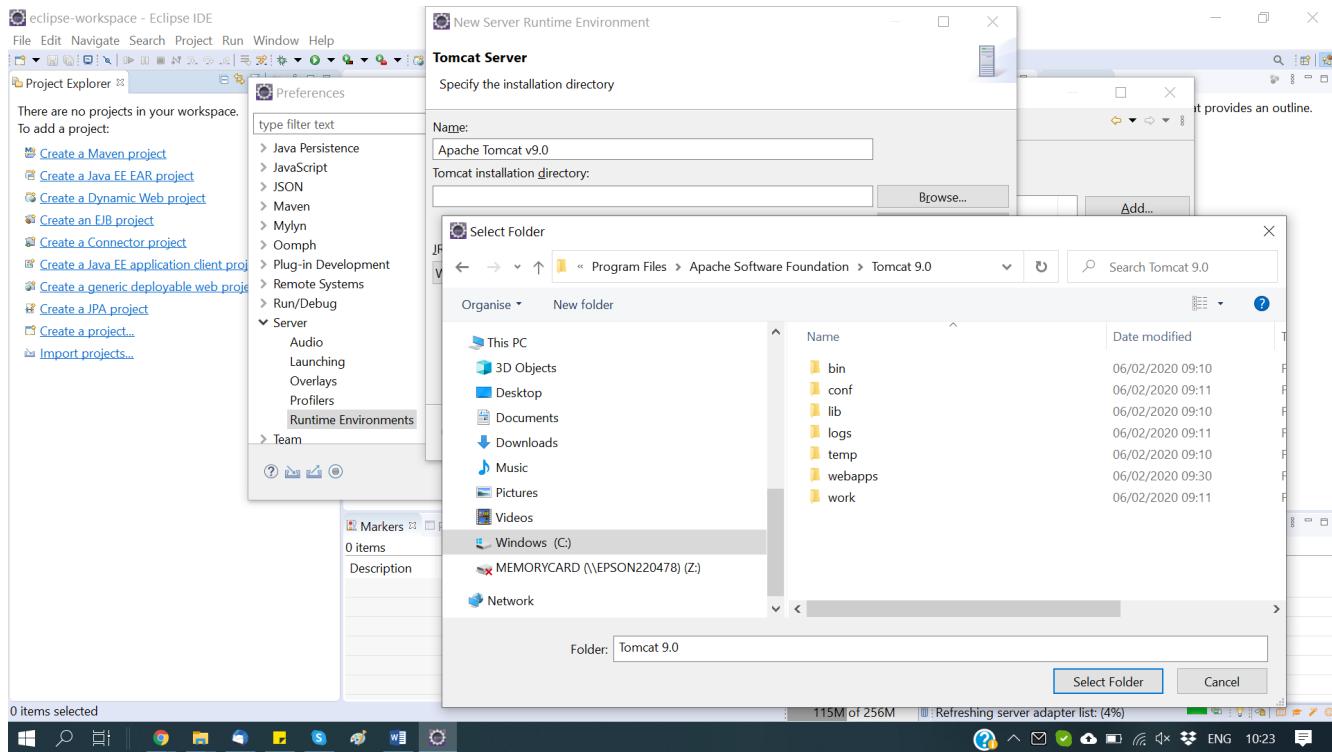


Figure 19 setting the Tomcat folder

Select the tab Servers. (If not visible go to Windows→Select View→Other.. → Servers)

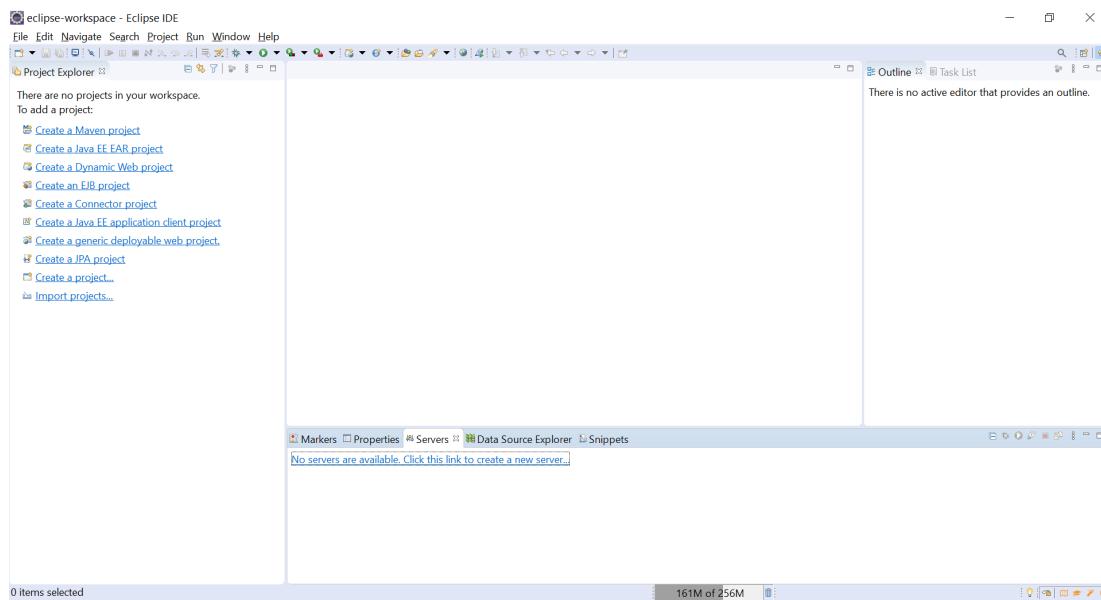


Figure 20 the Servers tab

Use the command to add a new server

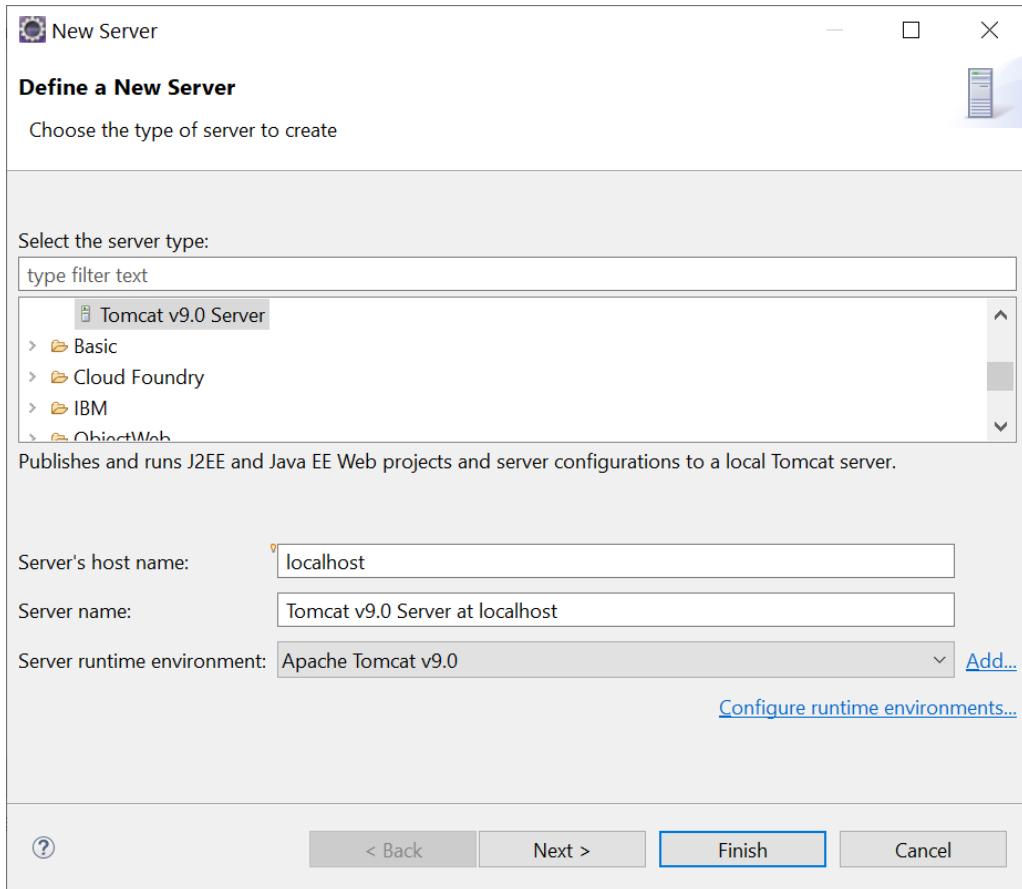


Figure 21 add Tomcat as a server

Select the latest version of Tomcat and click on Finish. At this point, the Tomcat server is connected to Eclipse and one can interact with it through the Eclipse interface.

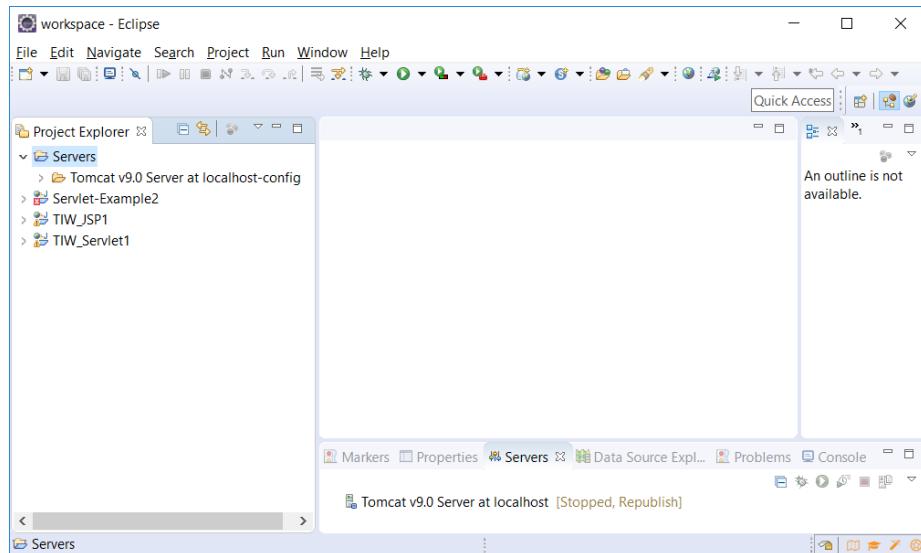


Figure 22 Tomcat appears under the Servers node in the Project Explorer

3.3 Configuring Tomcat

In the Servers tab, double click on the Tomcat server. The server properties will open. Under the Server Locations section, select the option “*Use Tomcat installation (takes control of Tomcat installation)*”. Then, modify the Deploy path, to make it equal to “webapps”. Save and close the server properties.

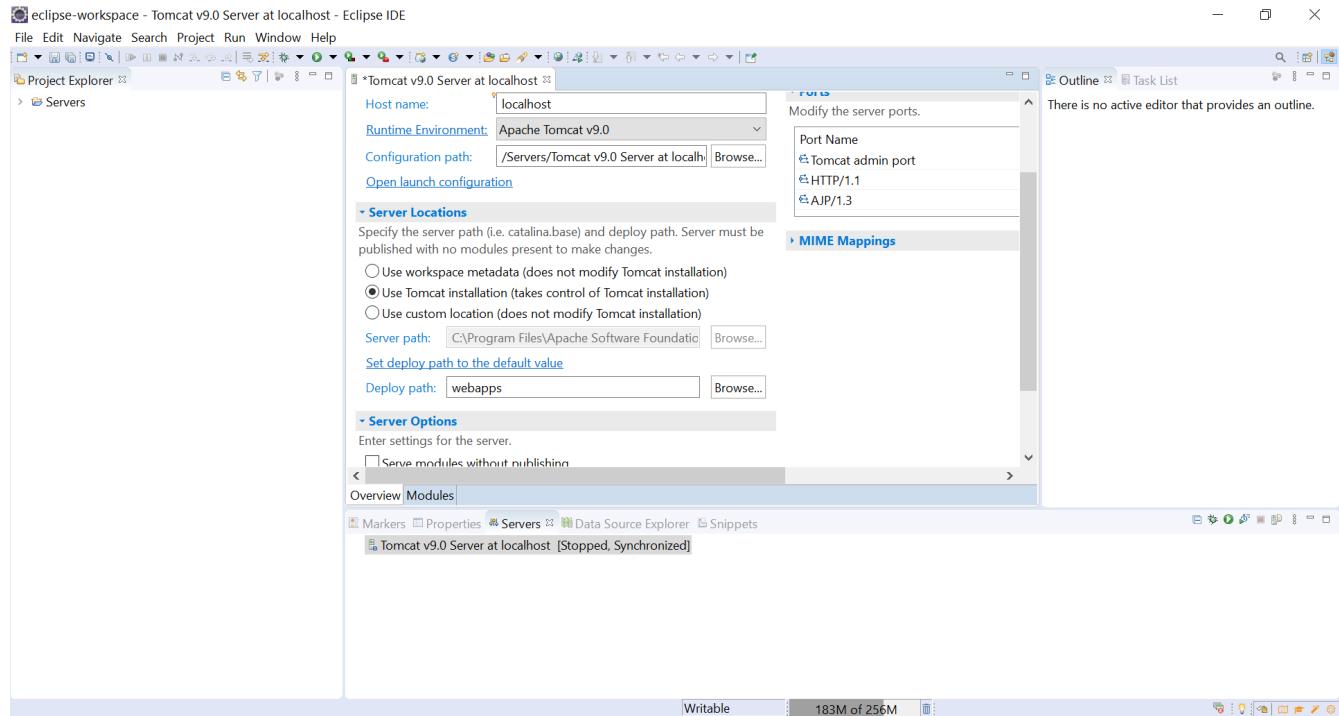
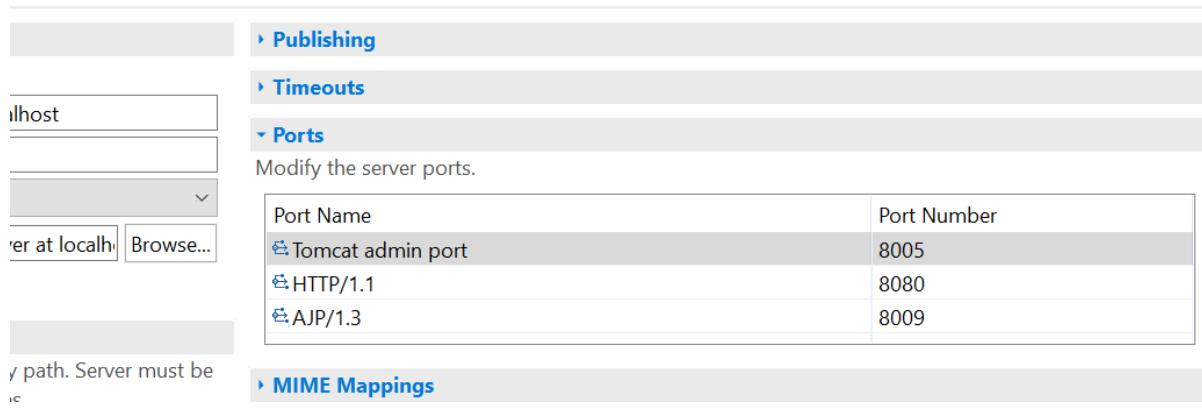


Figure 23 configuring Tomcat

Set the admin port to a distinct value as shown.



Port Name	Port Number
Tomcat admin port	8005
HTTP/1.1	8080
AJP/1.3	8009

Figure 24: setting the admin port of Tomcat in Eclipse

3.4 Starting Tomcat

In the tab Servers, right click on the Tomcat server and click on Start. The console shows the server status. When the message “*INFO: Server startup in XXX ms*” is shown, the server is up and running.

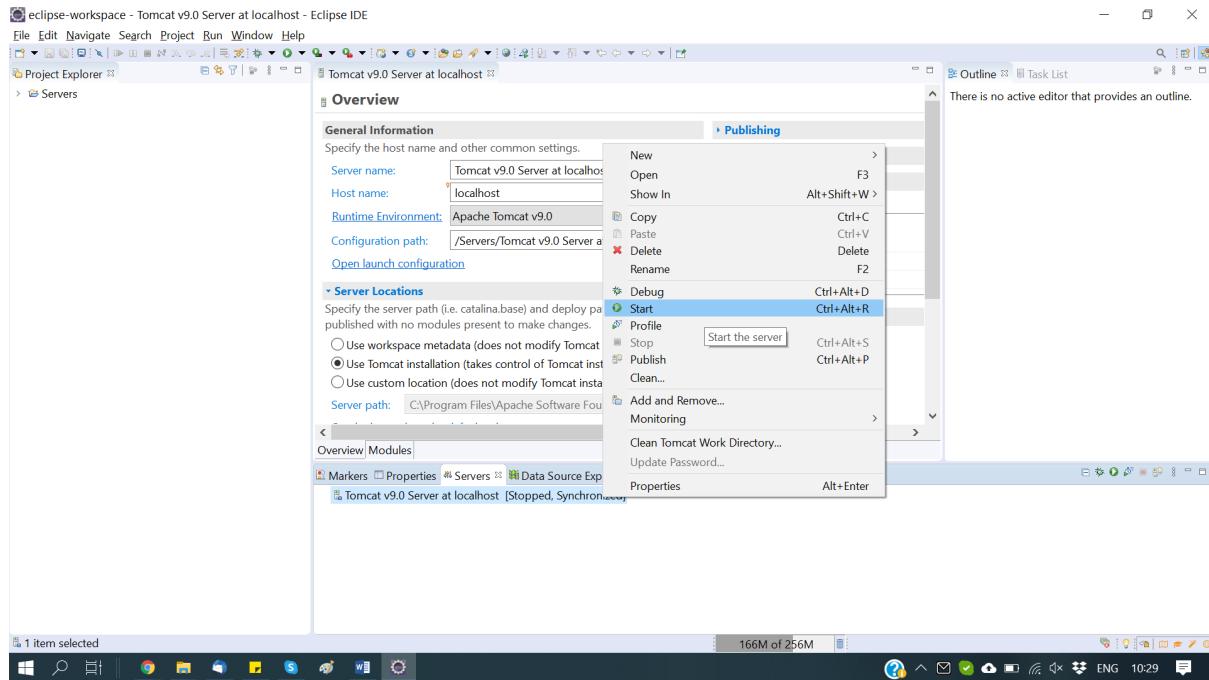


Figure 25: starting Tomcat from the servers tab

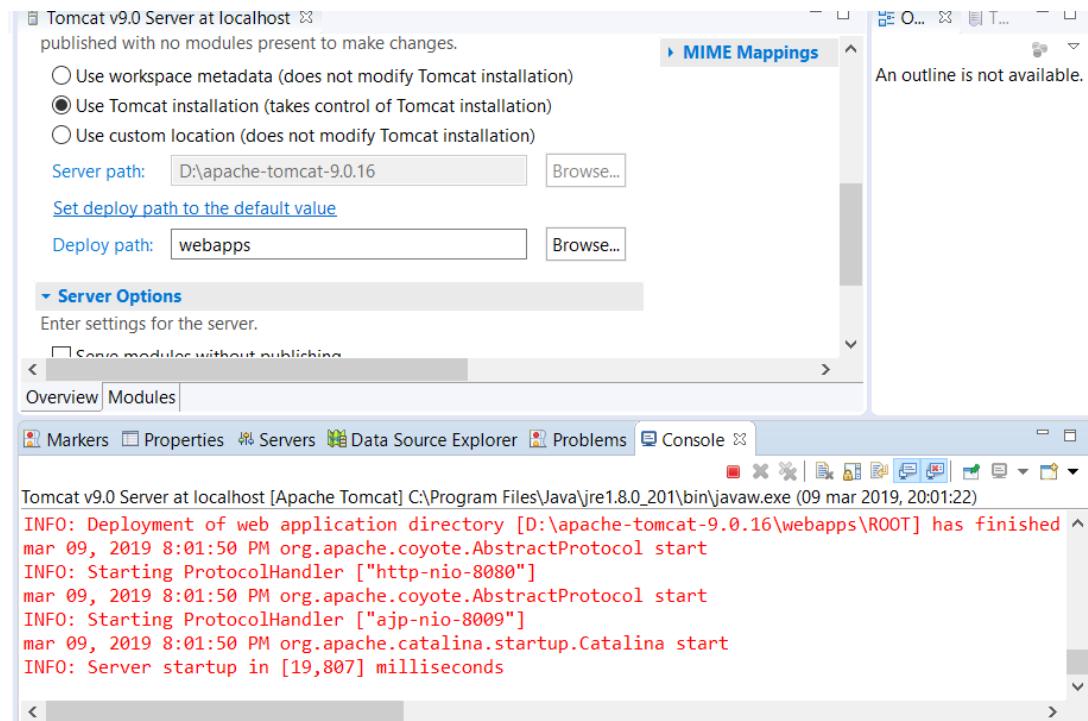


Figure 26: console message showing that Tomcat is running

To check that Tomcat is running open the internal web browser:

Windows/Mac OS/Linux

Go to the menu Window → Show View → Internal Web Browser

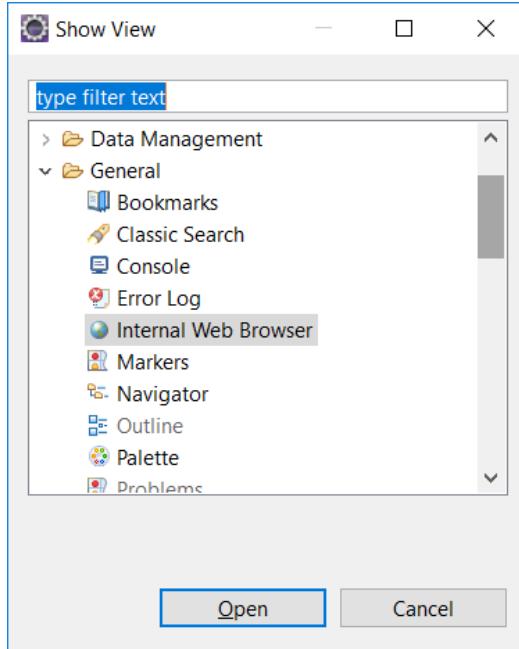


Figure 27: showing the internal web browser

Type `http://localhost:8080` in the location area of the internal browser.

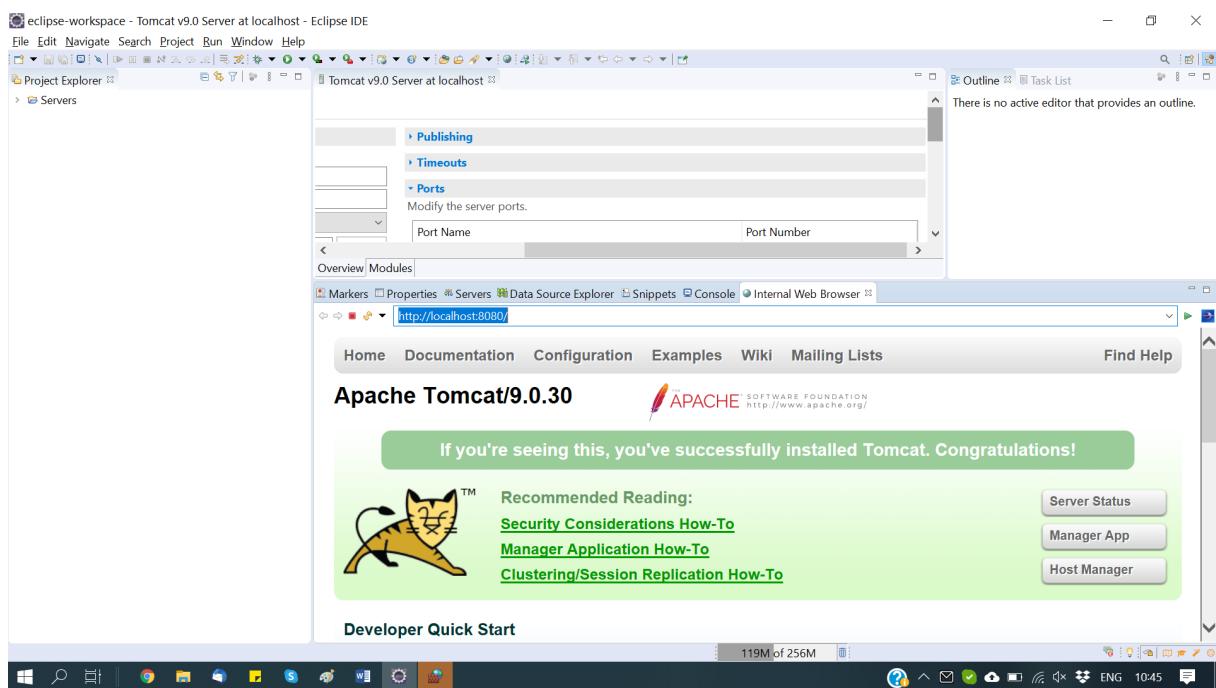


Figure 28 opening the home page of tomcat in the internal browser

4 Publishing content

4.1 Creating a dynamic web project

In the Project Explorer section, right click and select New -> Project -> Web -> Dynamic Web Project

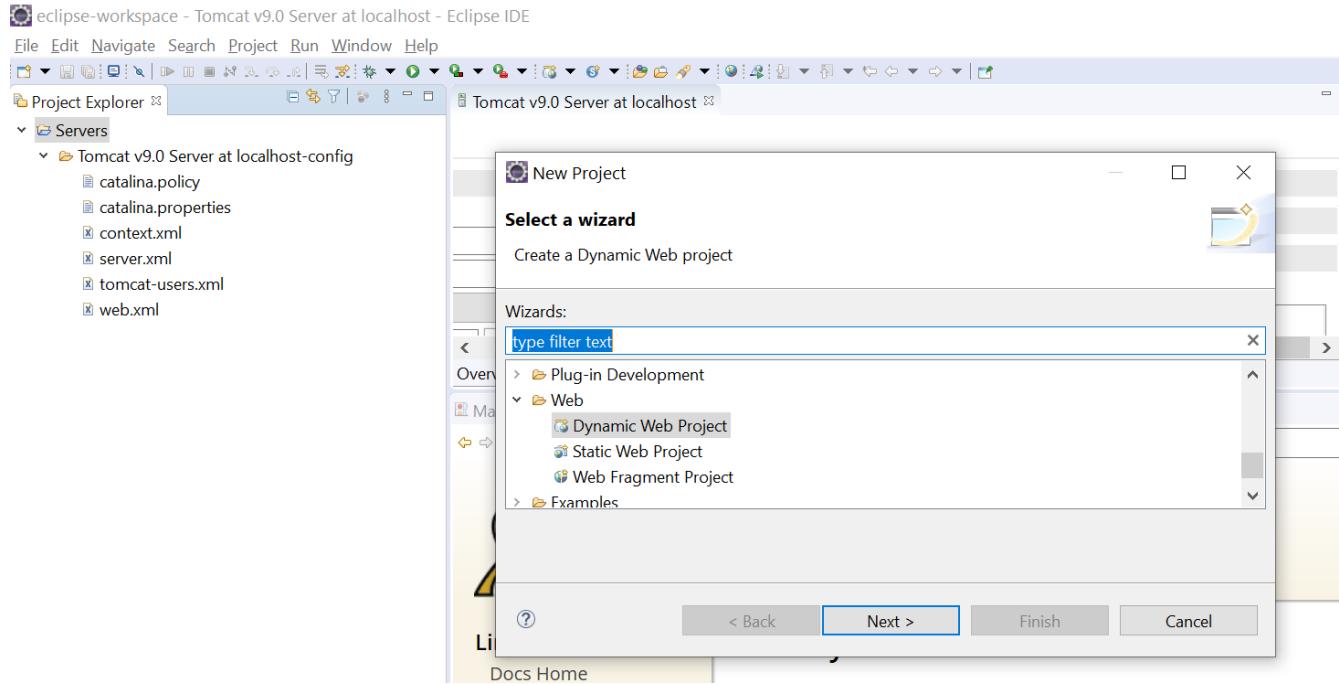


Figure 29: creating a dynamic web project

In the project creation wizard, name the project TestProject and accept all the creation defaults.

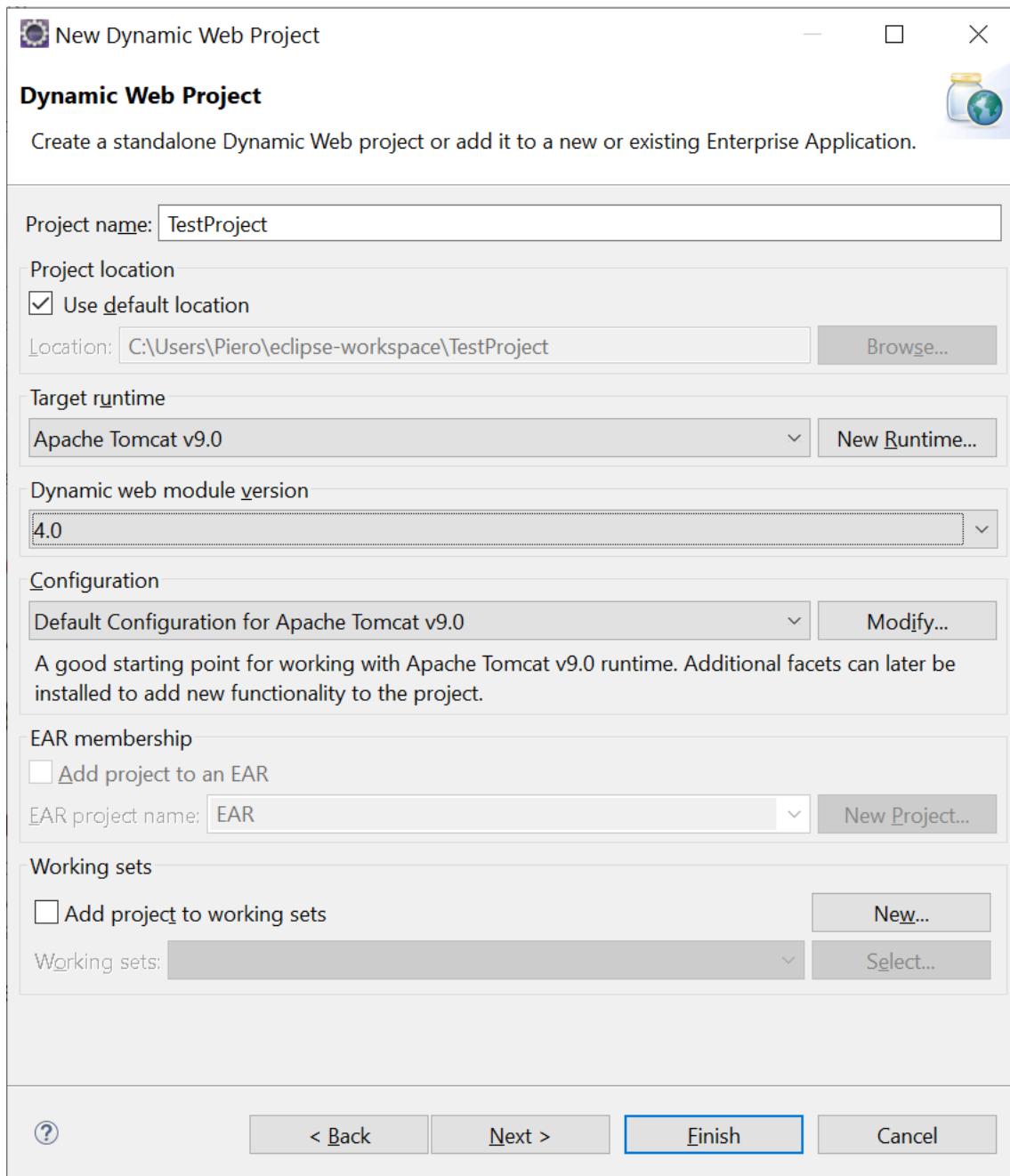


Figure 30: naming and creating a dynamic web project

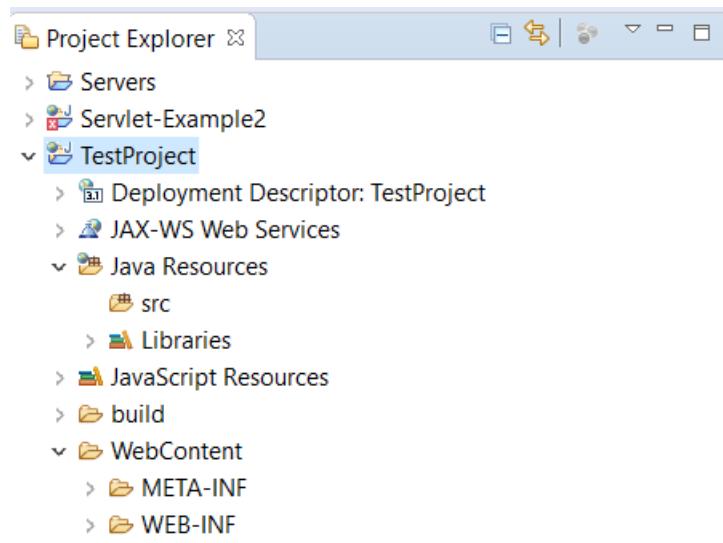


Figure 31: dynamic project structure created in the project explorer

4.2 Writing the Web component

Right click on the project source folder, i.e., Java Resources > src inside the created application, then select New > Servlet.

Give the name TestServlet to the servlet and the name *it.polimi.tiw.test* to the package. In the servlet creation wizard, accept all defaults and finish.

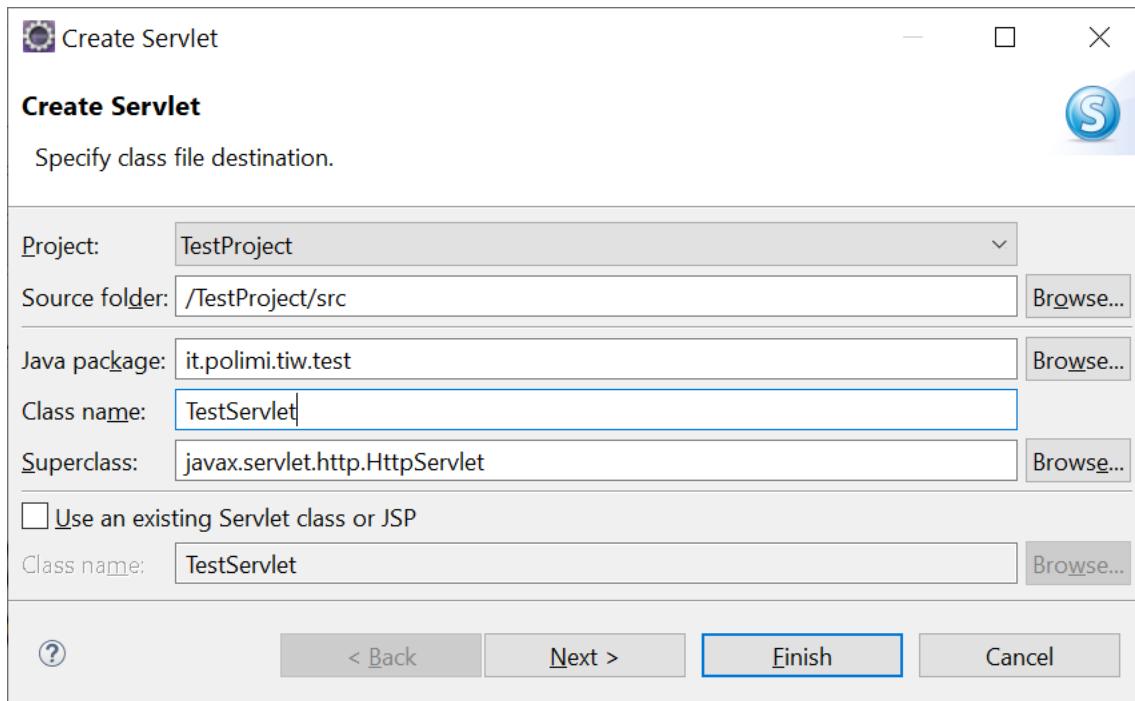


Figure 32: name the servlet class and the enclosing package

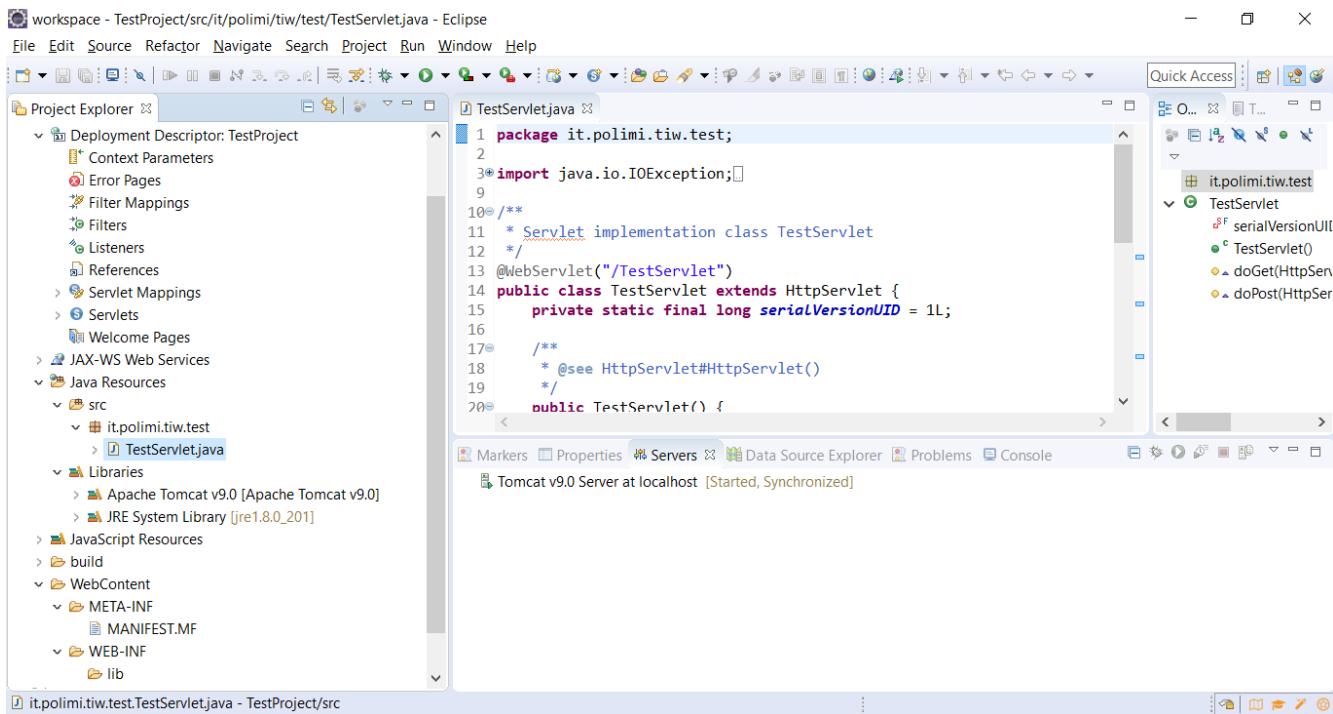


Figure 33: a newly created servlet

Remove entirely the auto-generated code, paste the following, and save the project files.

```

package it.polimi.tiw.test;
import java.io.*;
import javax.servlet.*;
import javax.servlet.http.*;

public class TestServlet extends HttpServlet {

    private static final long serialVersionUID = 1L;

    protected void doGet(HttpServletRequest request, HttpServletResponse
    response)
            throws ServletException, IOException {
        response.setContentType("text/plain");

        PrintWriter out = response.getWriter();
        out.println("Hello this is a test");

        out.close();
    }
}

```

In the WebContent/WEB-INF folder, create a file named *web.xml*, right click on it to edit it with a standard text editor and put this content in it:

```

<web-app xmlns="http://xmlns.jcp.org/xml/ns/javaee"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://xmlns.jcp.org/xml/ns/javaee
  http://xmlns.jcp.org/xml/ns/javaee/web-app_4_0.xsd"
  version="4.0">
  <servlet>
    <servlet-name>TestServlet</servlet-name>
    <servlet-class>it.polimi.tiw.test.TestServlet</servlet-class>
  </servlet>
  <servlet-mapping>
    <servlet-name>TestServlet</servlet-name>
    <url-pattern>/</url-pattern>
  </servlet-mapping>
</web-app>

```

You can use *CRTL-SHIFT-F* to indent the code automatically.

To add the created project to the Tomcat server, right click on the server (in the Servers tab), then select Add and Remove. Select TestProject from the left-hand side of the menu, press the Add button and finally click on Finish.

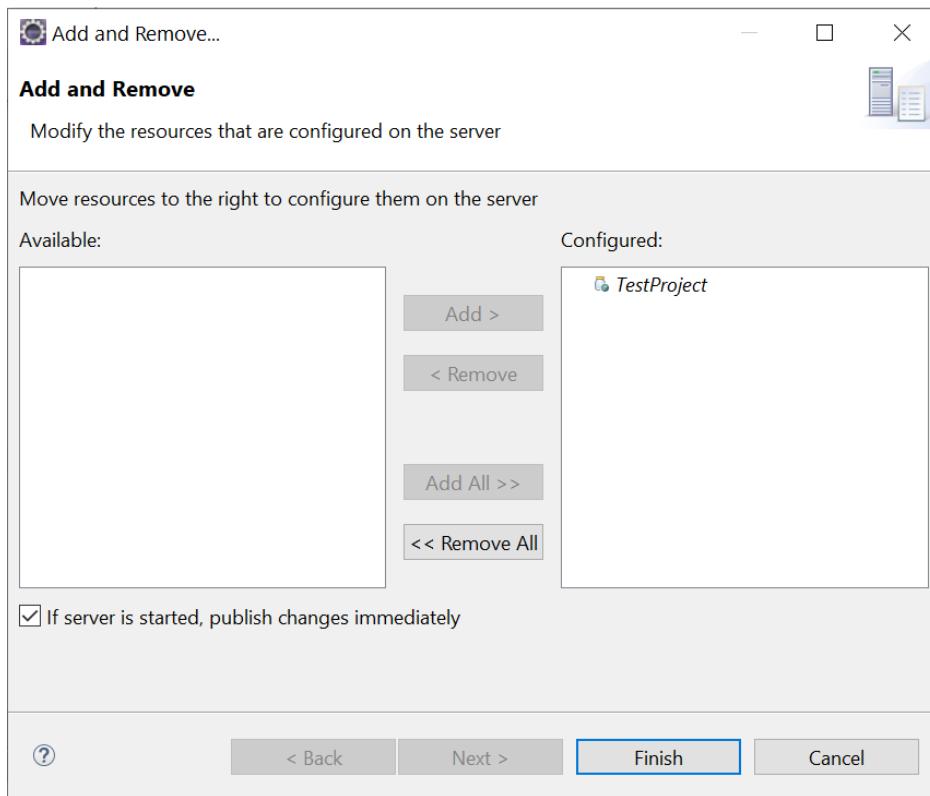


Figure 34: adding the project to the Tomcat server

The screenshot shows the Eclipse IDE interface with the 'Console' tab selected. The output window displays the deployment logs for Tomcat 9.0. The logs indicate the server startup, deployment of the 'TestProject', and various deployment warnings related to the deployment descriptor.

```

Tomcat v9.0 Server at localhost [Apache Tomcat] C:\Program Files\Java\jdk-13.0.2\bin\javaw.exe (6 Feb 2020, 10:42:30)
INFO: Server startup in [1,537] milliseconds
Feb 06, 2020 11:01:54 AM org.apache.catalina.startup.HostConfig deployDescriptor
INFO: Deploying deployment descriptor [C:\Program Files\Apache Software Foundation\Tomcat 9.0\conf\Catalina\localhost\TestProject.xml]
Feb 06, 2020 11:01:54 AM org.apache.catalina.startup.HostConfig deployDescriptor
WARNING: The path attribute with value [/TestProject] in deployment descriptor [C:\Program Files\Apache Software Foundation\Tomcat 9.0\conf\Catalina\localhost\TestProject.xml] is deprecated
Feb 06, 2020 11:01:54 AM org.apache.catalina.startup.HostConfig deployDescriptor
WARNING: A docBase [C:\Program Files\Apache Software Foundation\Tomcat 9.0\webapps\TestProject] inside the host appBase has been specified
Feb 06, 2020 11:01:54 AM org.apache.catalina.startup.HostConfig deployDescriptor
INFO: Deployment of deployment descriptor [C:\Program Files\Apache Software Foundation\Tomcat 9.0\conf\Catalina\localhost\TestProject.xml]

```

Figure 35: deployment of the project in Tomcat

4.3 Testing your application

Select the TestProject project in the Project Explorer, right click on it, choose the RunAs command, then select RunOnServer.

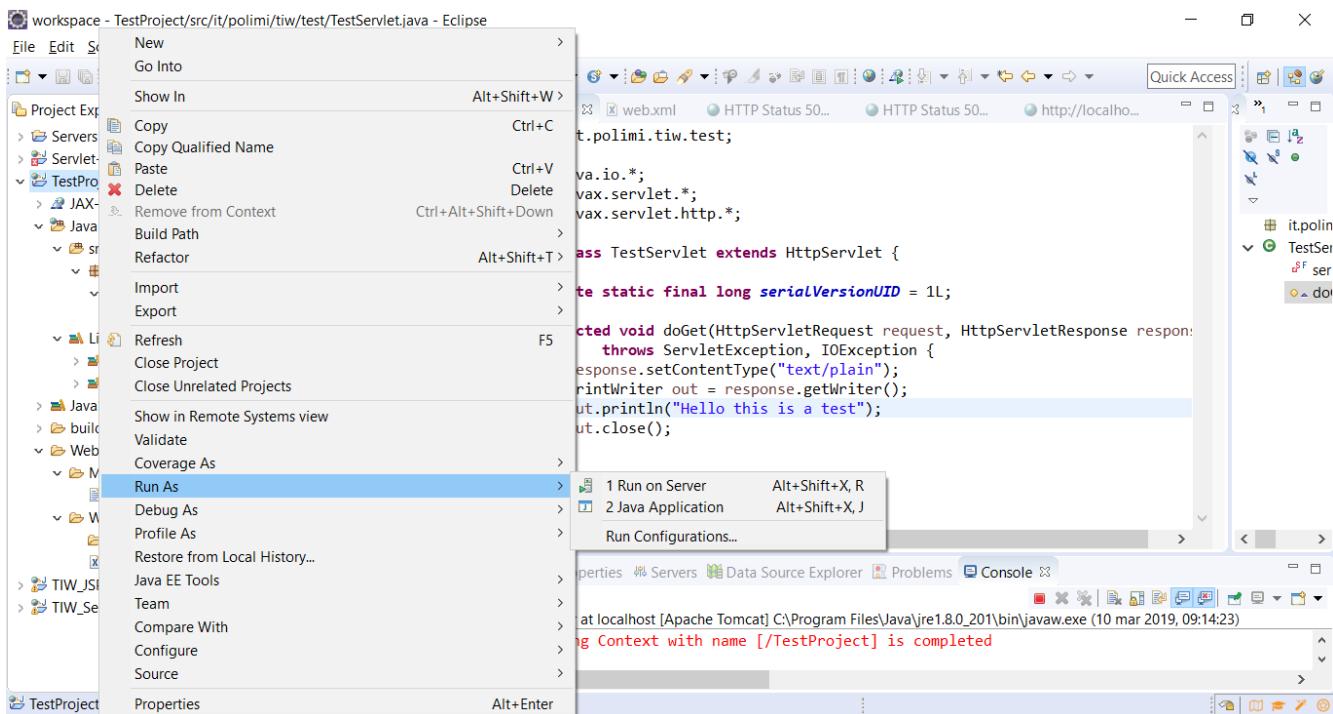


Figure 36: running the project on a server

Select the tomcat server and finish.

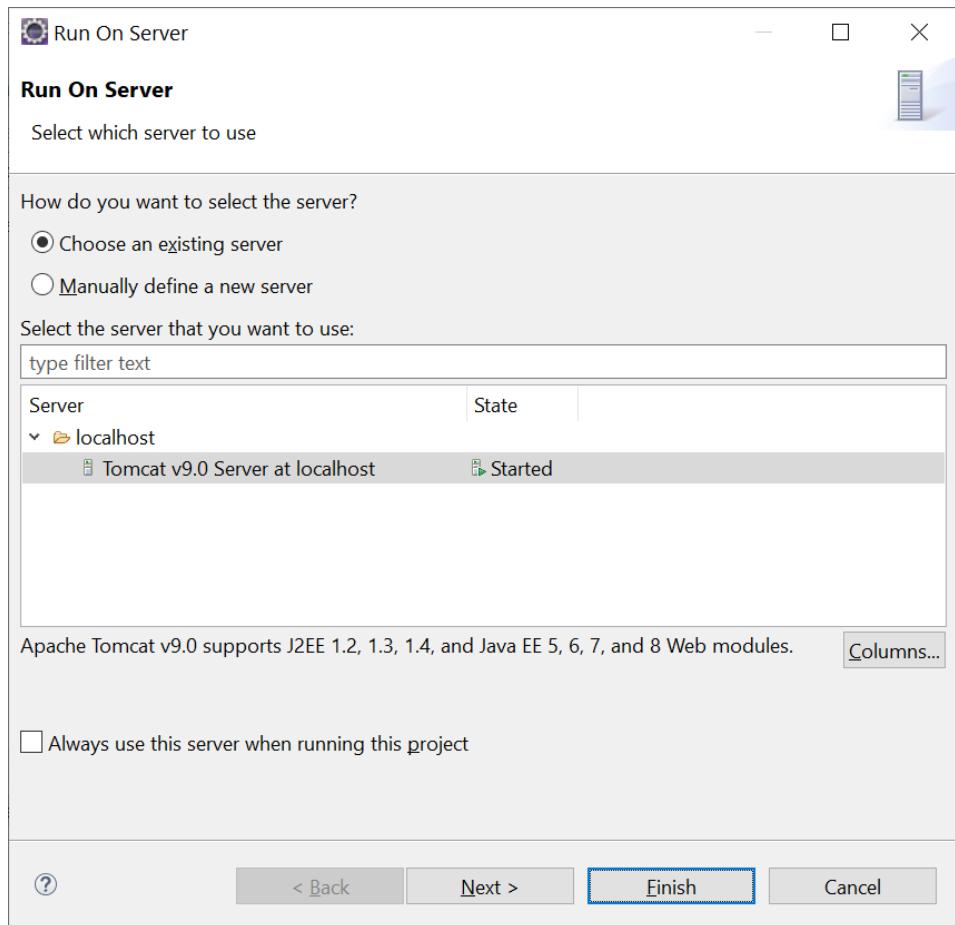


Figure 37: deploying the project on Tomcat

Restart the server and continue.

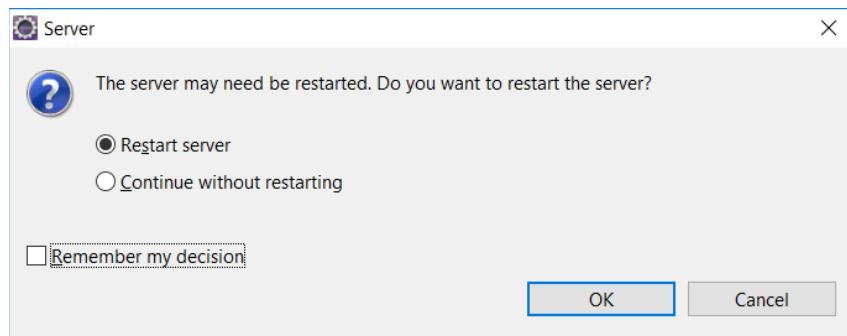


Figure 38: restarting the server (optional)

Now the internal browser window opens on the location of the home page of the project.

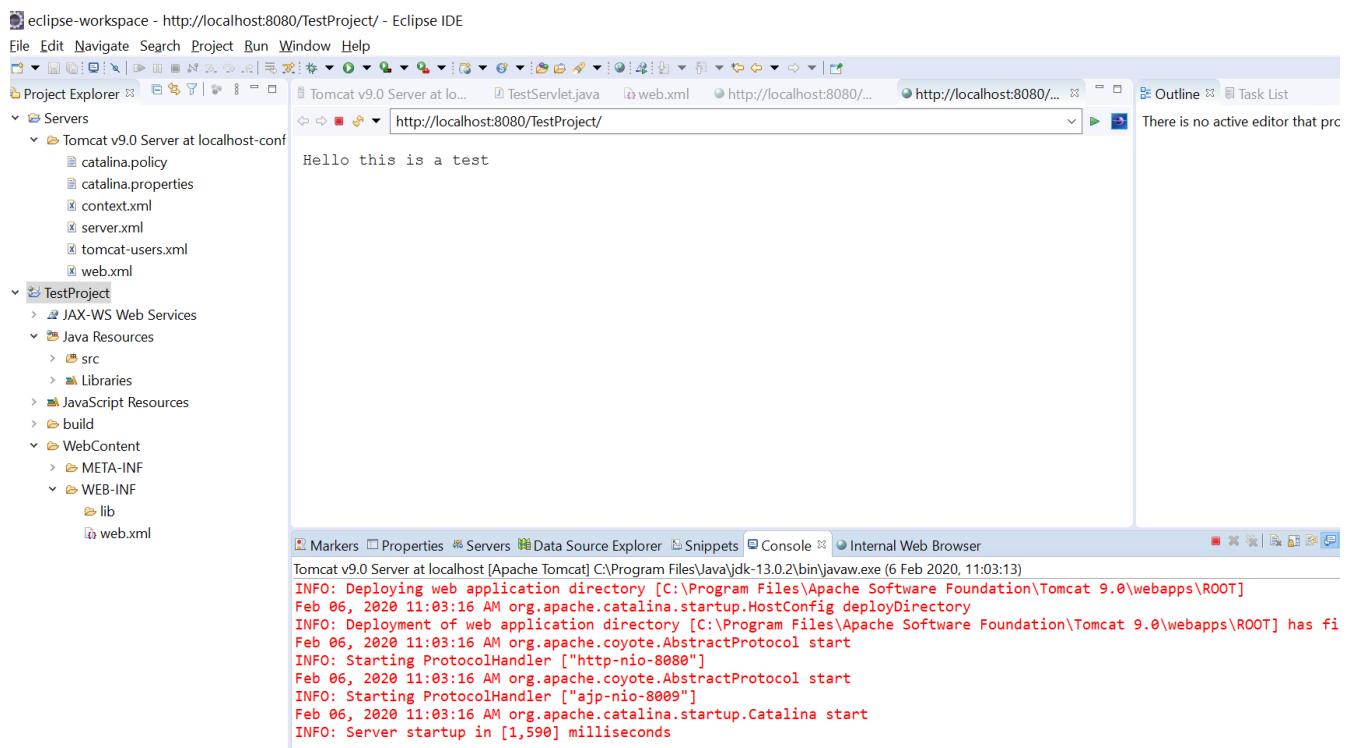


Figure 39: the internal browser opens on the location of the servlet

5 Connecting with JDBC

5.1 Add mysql connector to the project

Obtain the Connect/J jar file

WINDOWS

The file is already part of the MySQL installation. It can be found, for example, at the location

C:\Program Files (x86)\MySQL\Connector J 8.0\mysql-connector-java-8.0.19.jar

LINUX and OS X

Download MySQL Connector/J, the official JDBC driver for MySQL.

<https://dev.mysql.com/downloads/connector/j/>

Choose the platform independent version.

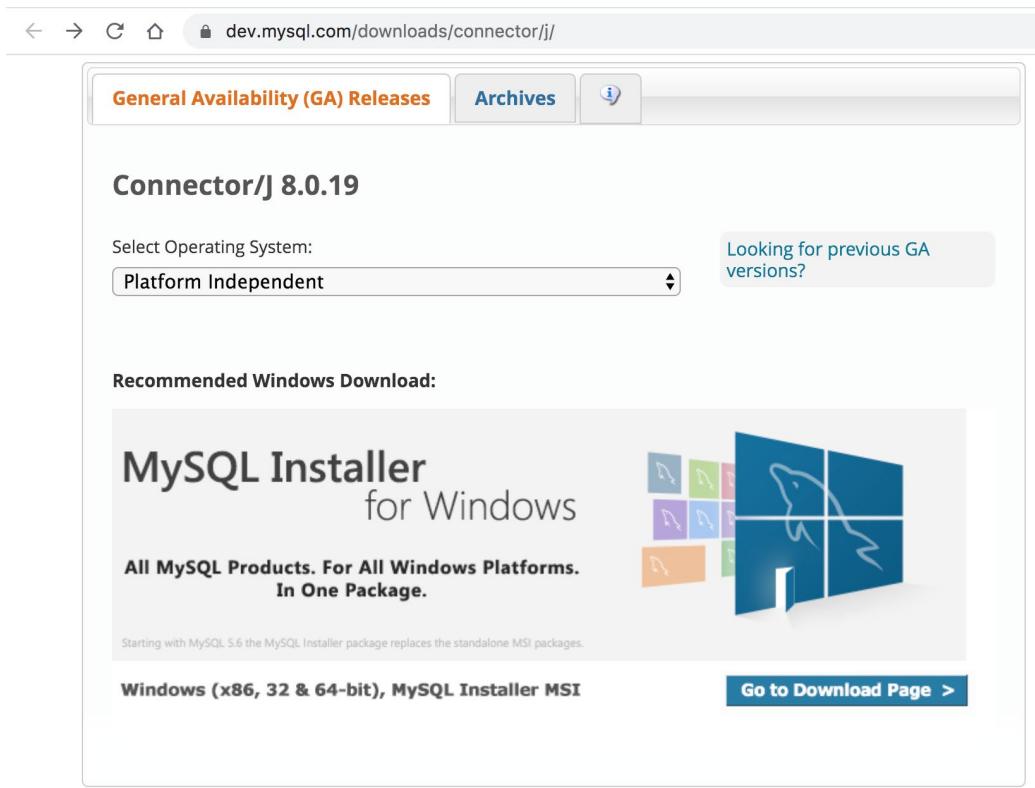


Figure 40: downloading the proper version of the connector library

Extract to a local folder the file mysql-connector-java-{version}.zip (or tar.gz).

5.2 Installing Connector/J in Tomcat

The first option is to copy the mysql-connector-java-{version}.jar into tomcat by adding it to {tomcat installation path}/lib folder.

Alternatively, you can add the library file to a specific project as follows:

Copy the file the mysql-connector-java-{version}.jar and paste it in Eclipse into the to the project directory WebContent/WEB-INF/lib/

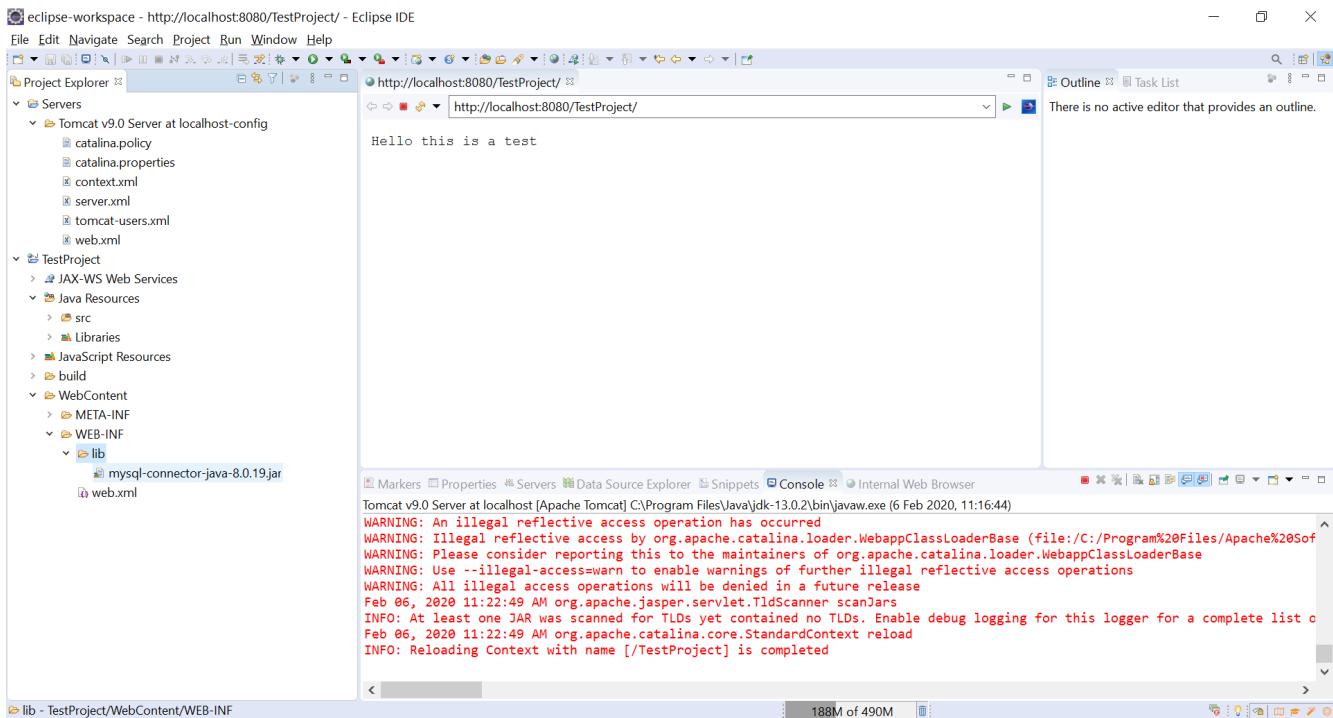


Figure 41: adding the ConnectorJ jar file to a specific project

In the Eclipse Project Explorer, right click on the project, and select Build Path, the press on Add Jars and add the mysql-connector-java-{version}.jar library to the project.

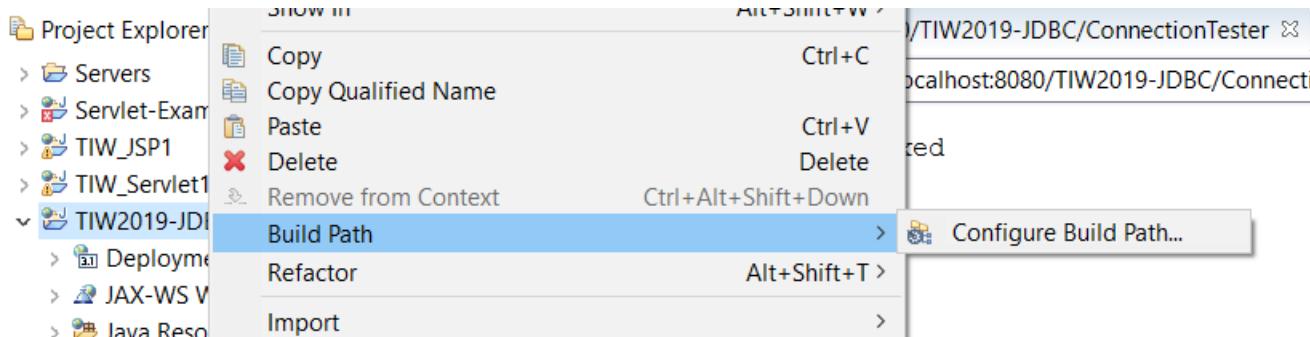


Figure 42: configuring the build path of the project

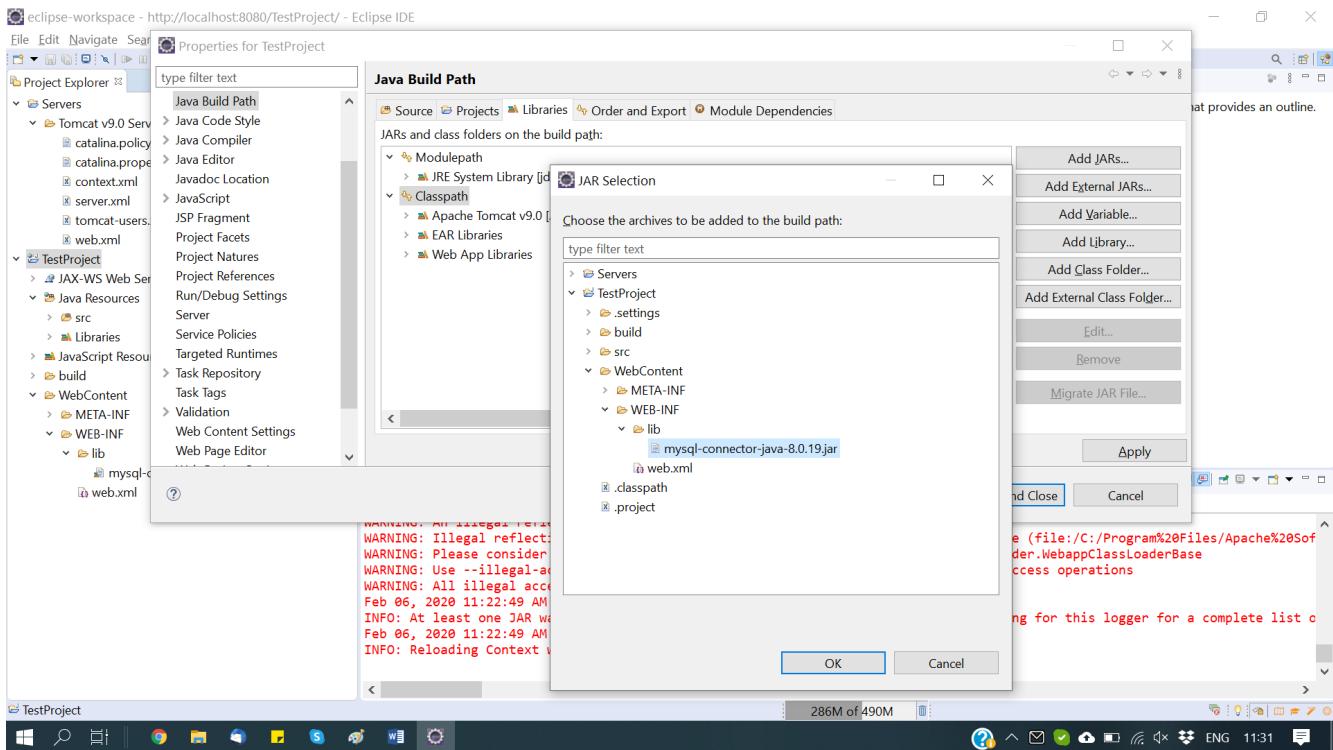


Figure 43: adding the JAR to the project build path (to the classpath)

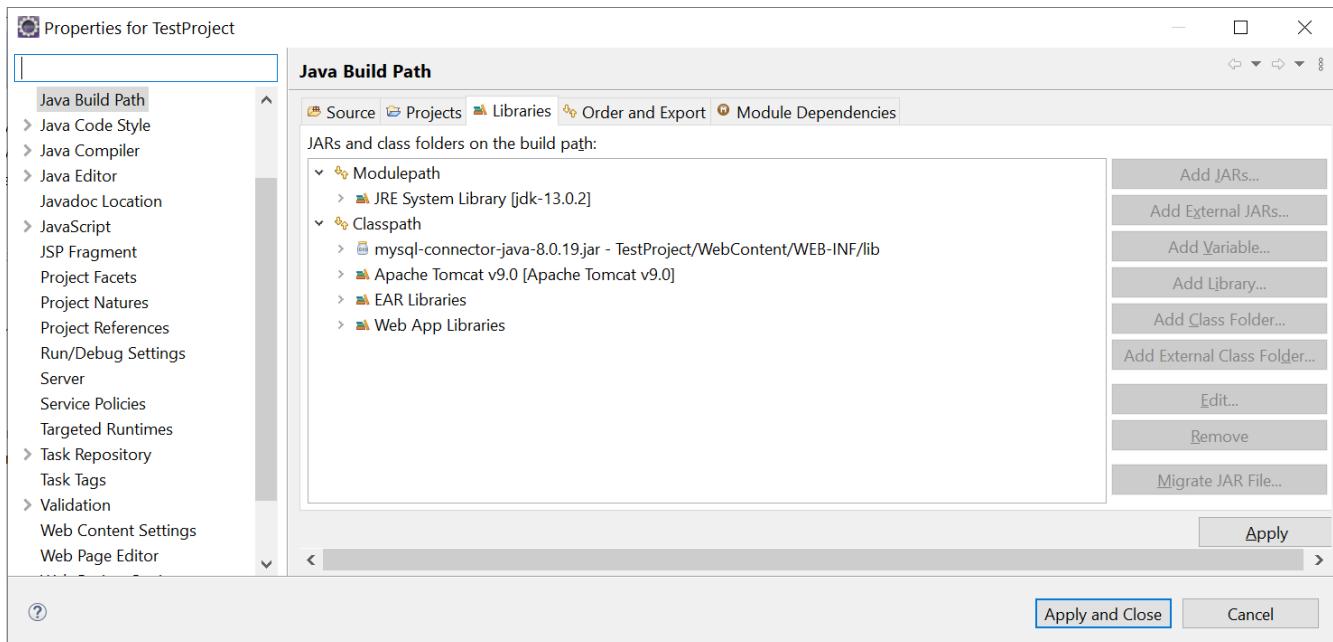


Figure 44: checking the build path for the presence of Connector/J

5.3 Create a new servlet

Create a new dynamic web project and add to it a Servlet.

Edit the servlet source and paste this code (be sure to modify your database USER and PASSWORD to set them to a database user you have created and associated with the dbtest database schema)

```
package it.polimi.tiw.jdbcTest;

import java.io.IOException;
import java.io.PrintWriter;
import java.sql.DriverManager;

import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;

@WebServlet("/ConnectionTester")
public class ConnectionTester extends HttpServlet {
    private static final long serialVersionUID = 1L;

    protected void doGet(HttpServletRequest request, HttpServletResponse response)
        throws ServletException, IOException {

        final String DB_URL = "jdbc:mysql://localhost:3306/dbtest";
        final String USER = "piero";
        final String PASS = "fraternali";
        String result = "Connection worked";
        try {
            Class.forName("com.mysql.cj.jdbc.Driver");
            DriverManager.getConnection(DB_URL, USER, PASS);
        } catch (Exception e) {
            result = "Connection failed";
            e.printStackTrace();
        }

        response.setContentType("text/plain");

        PrintWriter out = response.getWriter();
        out.println(result);
        out.close();
    }
}
```

Remember to create the web.xml file and to declare the servlet mapping in the web.xml file as done for the previous servlet.

5.4 Create a new database

To test the connection you need a SQL database. Create a new database, named dbtest, with the MySQL Workbench.

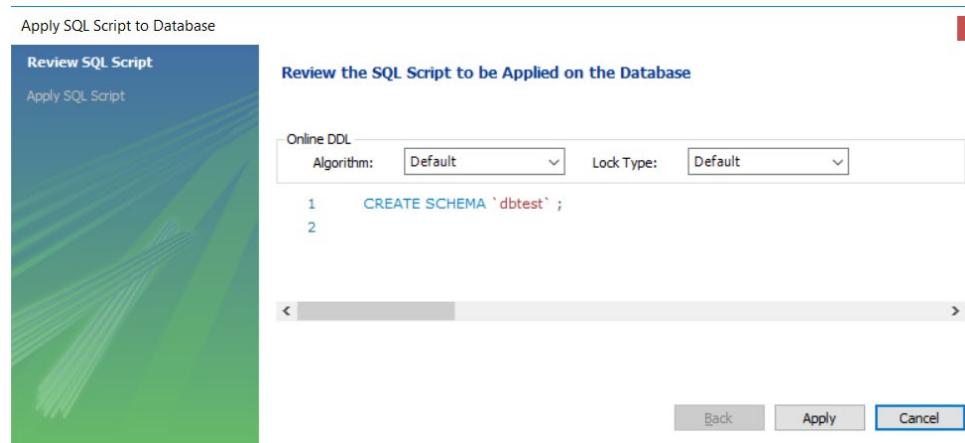
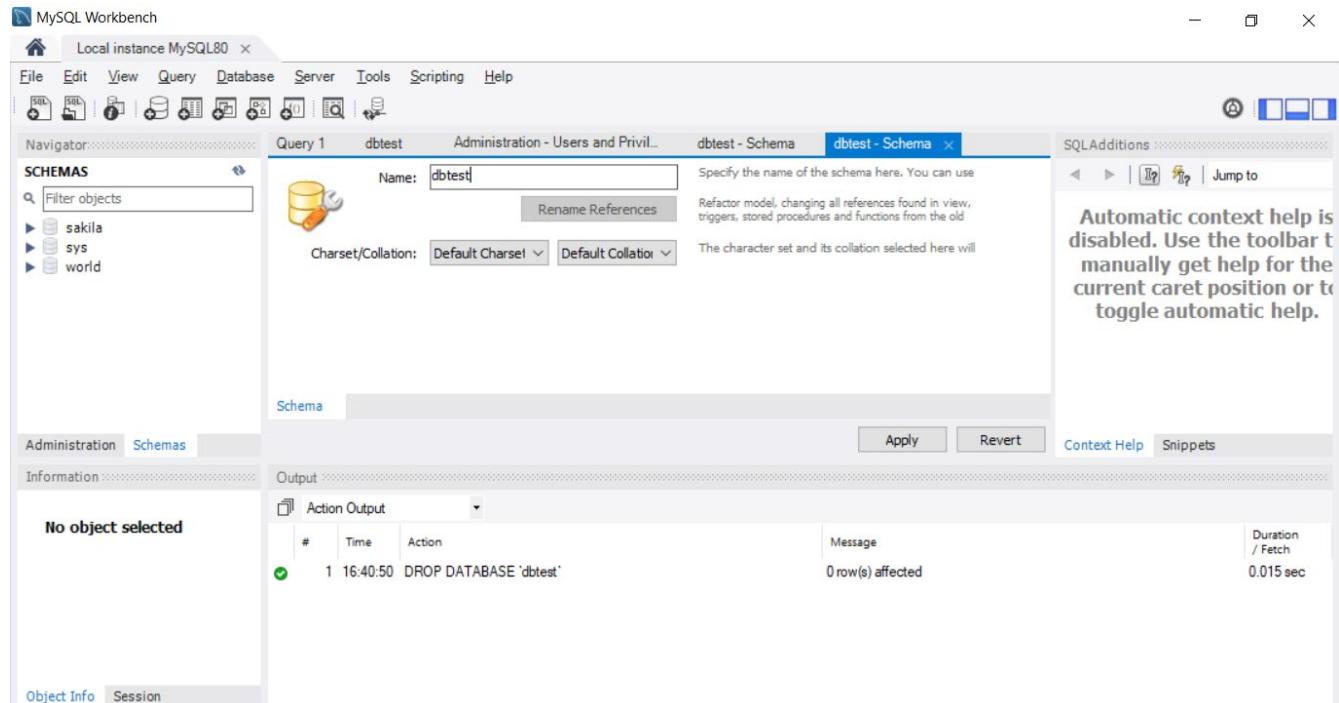


Figure 45: creating a test database

5.5 Run the project

Run your application (Run→Run on server...) and access the new servlet:

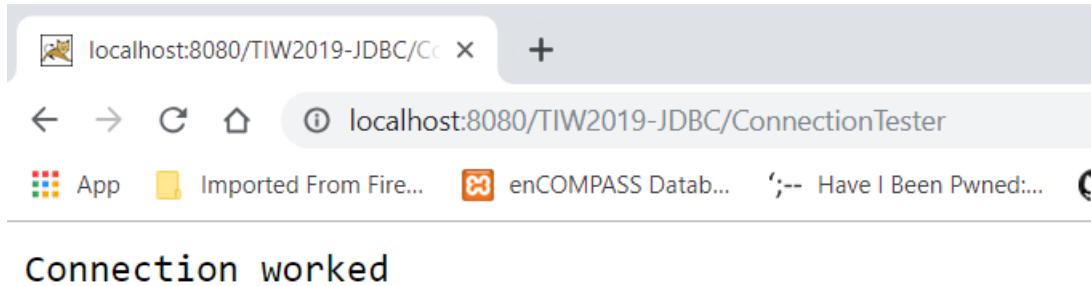


Figure 46: testing the servlet and the database connection

6 Stopping Tomcat

When you are not using Tomcat anymore, you can stop the server by right clicking on the server name and then selecting Stop.

7 Troubleshooting

7.1 Windows MySQL TimeZone Error

LOCAL SOLUTION (WORKING ALSO FOR OSX)

To every database connection append the parameter “?serverTimezone=UTC”.

An example is "jdbc:mysql://localhost:3306/dbtest?serverTimezone=UTC" in the web.xml file or in your servlet class.

This will overwrite the default time zone set by Windows or OSX

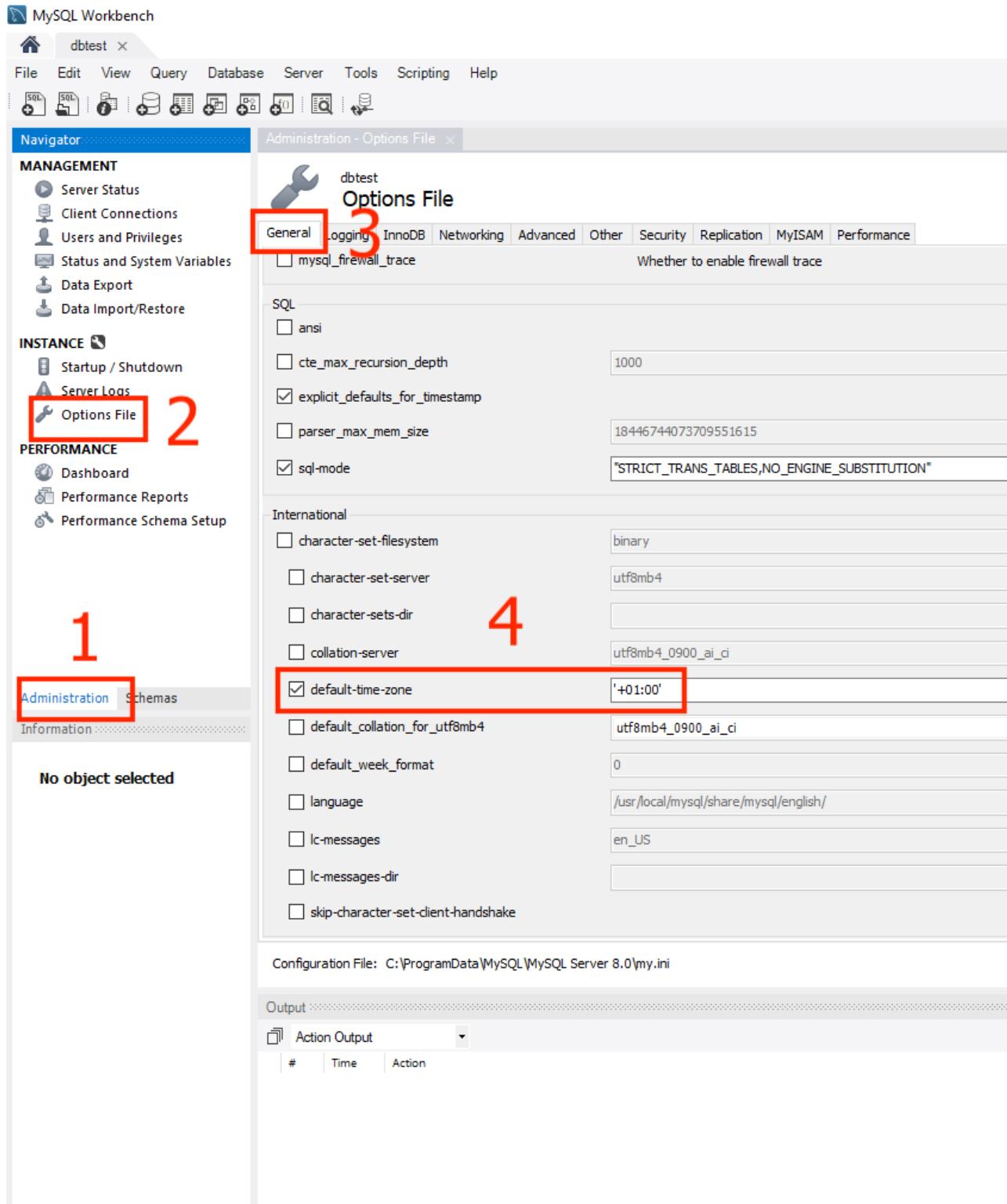
GLOBAL SOLUTION (SUGGESTED FOR WINDOWS)

This solution modifies the configuration file of mysql server so it will be applied to every database connection without the need to set the above parameter. **This is the suggested solution for windows.**

- Open MySQL Workbench and connect to a database (if you don't have any database just create one and connect to it)
- In the new window, you must click on the **Administration** tab and then the “**Options File**” option
- Now you must stay in the **general** tab and scroll to the bottom until you find the “**default-time-zone**” checkbox
- Select the checkbox and in the text field write ‘+01:00’ (**remember to write also the two ‘**)
- In the bottom-right corner check that “**mysqld**” is selected and the press apply

For the change to take effect, you need to restart the MySQL server service:

- Press WIN + R and type “**services.msc**” then press enter
- In the services window you must find the service called **MySQL80** (if you are using MySQL 8.0) and restart it



SQLAdditions

Locate option: Find

Automatic context
Use the toolbar to ...
for the current ca...
toggle auto...

Use ANSI SQL syntax instead of MySQL syntax

Common table expression maximum recursion depth

Whether TIMESTAMP columns are nullable and have DEFAULT NULL

Maximum amount of memory available to parser

Set the SQL server mode

Set the file system character set

Specify default character set

Directory where character sets are installed

Specify default collation

Specify default time zone

Default collation for utf8mb4 character set

The default week format used by WEEK() functions

Client error messages in given language. May be given as a full path

Locale for error messages

Directory where error messages are installed

Ignore client side character set value sent during handshake

mysqld

Discard

Apply...

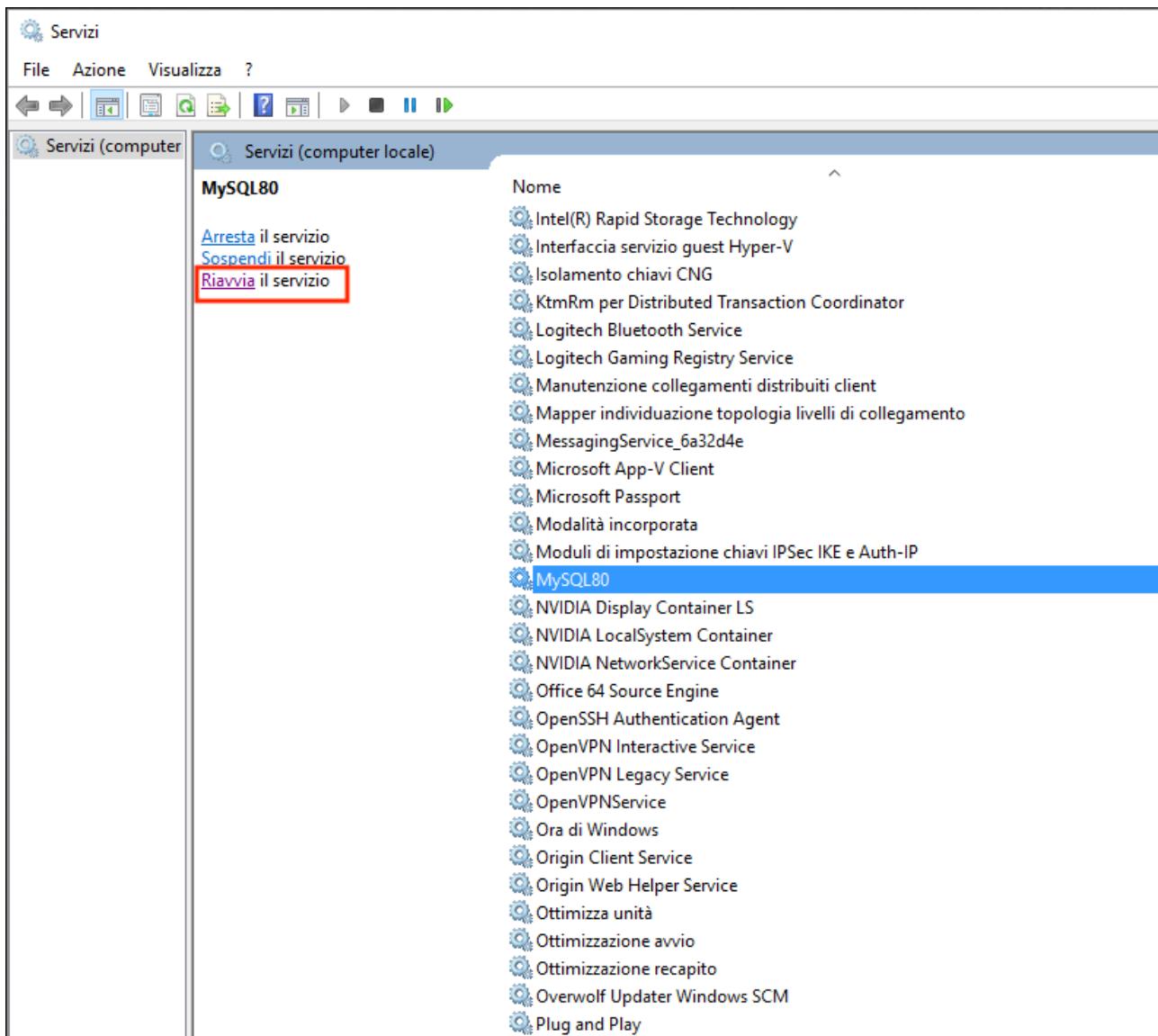
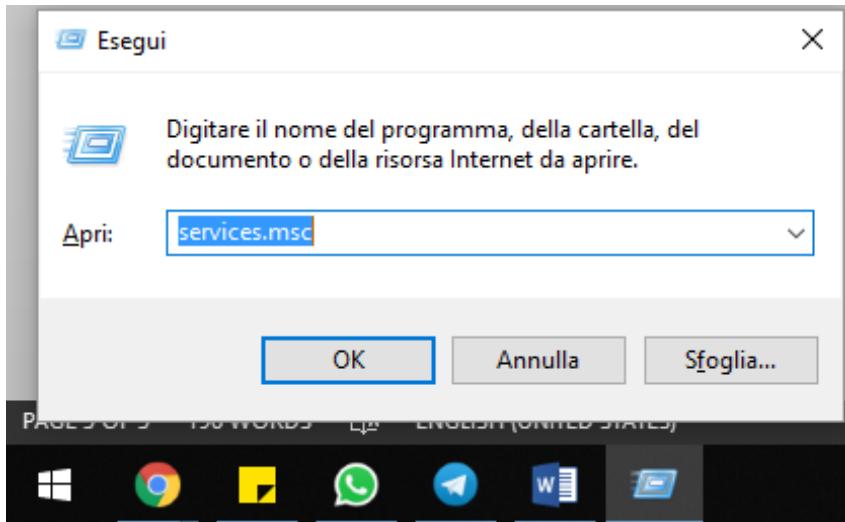
Context Help

Snippets

Message

5

6



References

- Eclipse documentation on Web Projects:
<https://help.eclipse.org/2018-12/topic/org.eclipse.wst.doc.user/topics/overview.html?cp=99>