

Configure for Lab

Bok, Jong Soon
javaexpert@nate.com
<https://github.com/swacademy/Spring5>

Contents

- JDK 1.8.0_221 Installation and Configuration
- Eclipse JEE Download and Configuration
- Maven 3.6.2 Configuration
- Maven Project in Eclipse
- Tomcat 9.0.26 Installation and Configuration
- STS 4.4.0.RELEASE Download and Configuration
- STS3 Add-On Installation



I. JDK 1.8.0_221



JDK 1.8.x Installation and Configuration

- JDK : <https://www.oracle.com/technetwork/java/javase/downloads/index.html>
- Documentation : <https://docs.oracle.com/javase/8/docs/>
- API : <https://docs.oracle.com/javase/8/docs/api/>

JDK 1.8.x Installation and Configuration (Cont.)

- JAVA_HOME
- PATH

C:\Windows\system32\cmd.exe

```
C:\Users\bluee>echo %JAVA_HOME%  
C:\Program Files\Java\jdk1.8.0_221
```

```
C:\Users\bluee>echo %PATH%  
C:\Program Files\Java\jdk1.8.0_221\bin;C:\Windows\system32;C:\Windows;C:\Windows\Syste  
m32\Wbem;C:\Windows\System32\WindowsPowerShell\v1.0\;C:\Windows\System32\OpenSSH\;C:\U  
sers\bluee\AppData\Local\Microsoft\WindowsApps;C:\Program Files\Bandizip\
```




II. Eclipse JEE



Eclipse JEE Download and Configuration

← → ↻ eclipse.org/downloads/packages/ ☆ 📄 📄 📄 📄 📄 📄 📄 📄 📄

[Members](#) [Working Groups](#) [Projects](#) [More ▾](#) [🔍](#) [Download](#)

[Home](#) / [Downloads](#) / [Packages](#) / [Release](#) / [Eclipse IDE 2019-09](#) / [R](#)

[Eclipse Installer](#) [Eclipse Packages](#) [Eclipse Developer Builds ▾](#)

Try the Eclipse **Installer** 2019-09 R


The easiest way to install and update your Eclipse Development Environment.


[Find out more](#)

📄 **706,944 Downloads**

Download

Mac OS X **64 bit**
Windows **64 bit**
Linux **64 bit**







Eclipse IDE 2019-09 R Packages

Eclipse IDE for Enterprise Java Developers

353 MB 130,188 DOWNLOADS



Tools for Java developers creating Enterprise Java and Web applications, including a Java IDE, tools for Enterprise Java, JPA, JSF, Mylyn, Maven, Git and more.
[Click here to file a bug against Eclipse Web Tools Platform.](#)
[Click here to file a bug against Eclipse Platform.](#)
[Click here to file a bug against Maven integration for web projects.](#)



Windows **64-bit**
Mac Cocoa **64-bit**
Linux **64-bit**

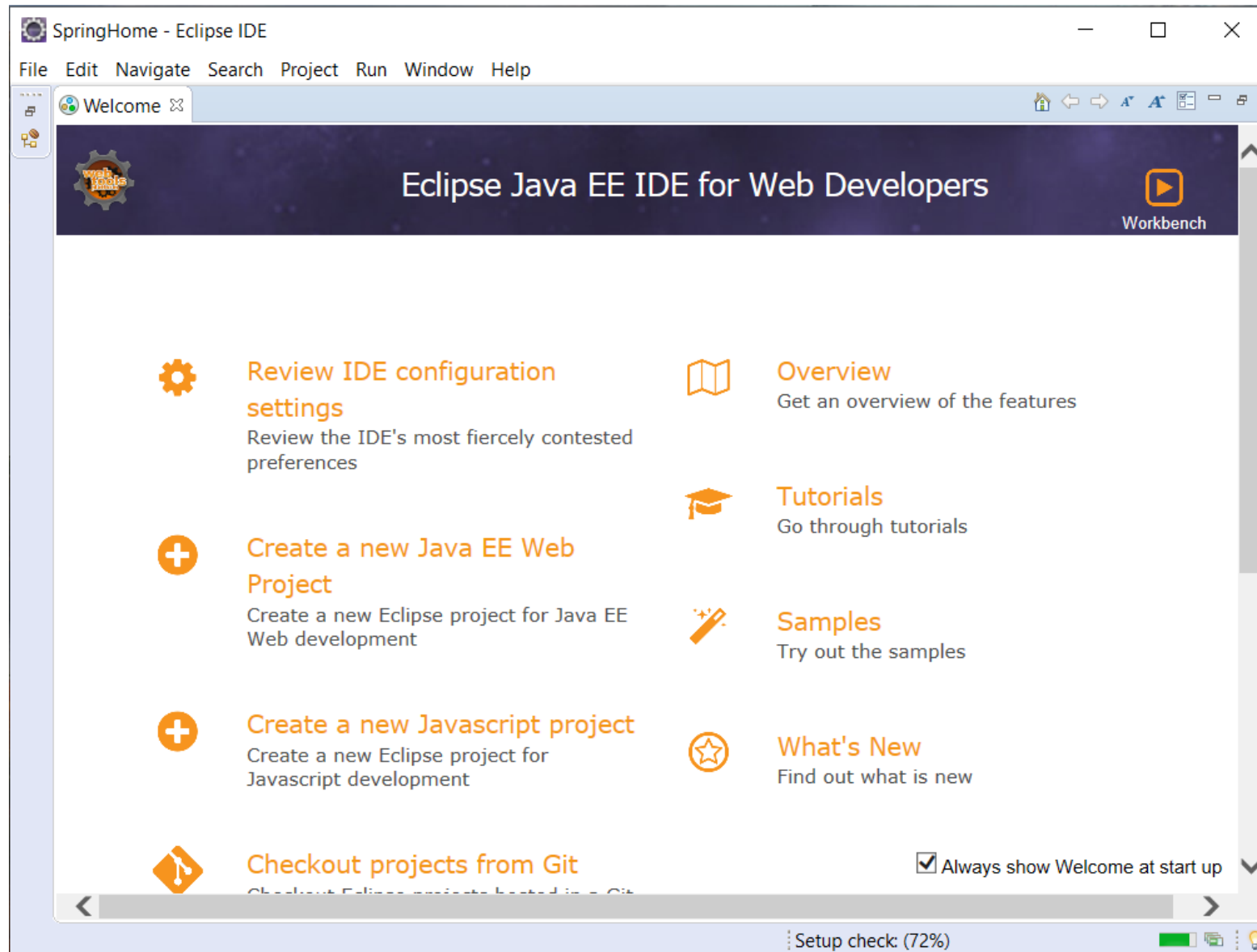
Get **Eclipse IDE 2019-09**

Install your favorite desktop IDE packages.

[Download 64 bit](#)

[Download Packages](#) | [Need Help?](#)

Eclipse JEE Download and Configuration (Cont.)



III. Maven 3.6.2

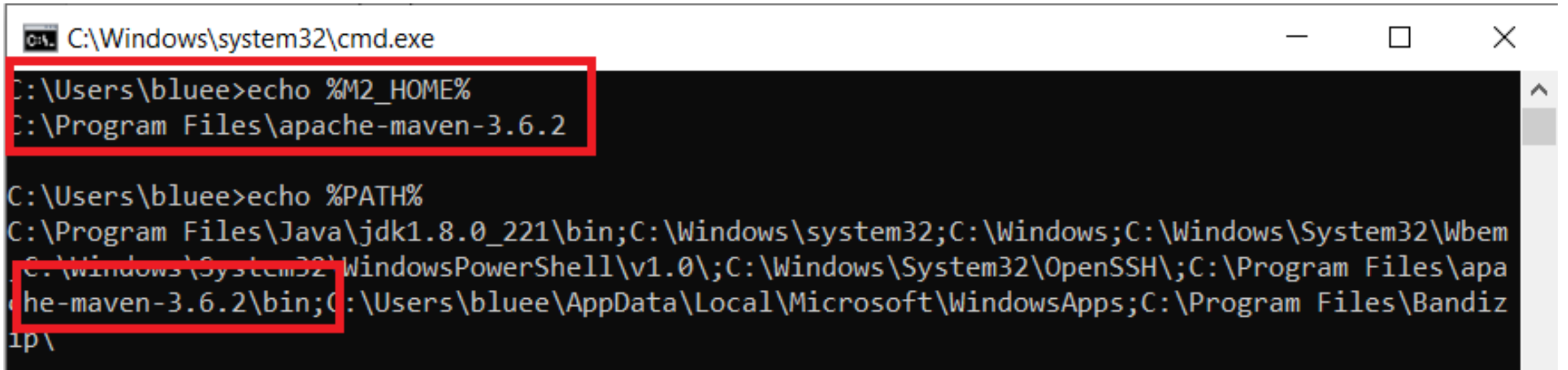


Maven 3.6.x Configuration

- <http://maven.apache.org/>
- Refer to : <http://javacan.tistory.com/entry/MavenBasic>
- Download
 - <http://maven.apache.org/download.cgi>
 - Binary zip archive : apache-maven-3.6.2-bin.zip

Maven 3.6.x Configuration (Cont.)

- M2_HOME(C: \ Program Files \ apache-maven-3.6.2) 설정
- PATH에 (%M2_HOME% \ bin) 추가



```
C:\Windows\system32\cmd.exe

C:\Users\bluee>echo %M2_HOME%
C:\Program Files\apache-maven-3.6.2

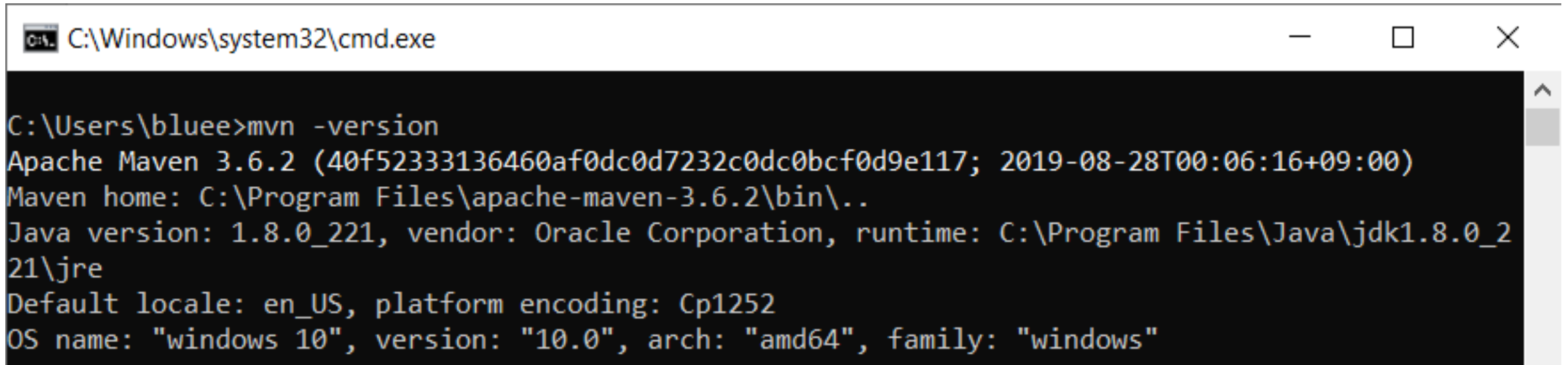
C:\Users\bluee>echo %PATH%
C:\Program Files\Java\jdk1.8.0_221\bin;C:\Windows\system32;C:\Windows;C:\Windows\System32\Wbem
C:\Windows\System32\WindowsPowerShell\v1.0\;C:\Windows\System32\OpenSSH\;C:\Program Files\apache-maven-3.6.2\bin;C:\Users\bluee\AppData\Local\Microsoft\WindowsApps;C:\Program Files\Bandizip\
```

The screenshot shows a Windows command prompt window with the title bar "C:\Windows\system32\cmd.exe". The command prompt displays the output of two commands: `echo %M2_HOME%` and `echo %PATH%`. The output of `echo %M2_HOME%` is `C:\Program Files\apache-maven-3.6.2`, and the output of `echo %PATH%` is a list of directories separated by semicolons, including `C:\Program Files\Java\jdk1.8.0_221\bin`, `C:\Windows\system32`, `C:\Windows`, `C:\Windows\System32\Wbem`, `C:\Windows\System32\WindowsPowerShell\v1.0\`, `C:\Windows\System32\OpenSSH\`, `C:\Program Files\apache-maven-3.6.2\bin`, `C:\Users\bluee\AppData\Local\Microsoft\WindowsApps`, and `C:\Program Files\Bandizip\`. The paths `C:\Program Files\apache-maven-3.6.2` and `C:\Program Files\apache-maven-3.6.2\bin` are highlighted with red boxes.

Maven 3.6.x Configuration (Cont.)

■ 설치 확인

\$ **mvn -version**

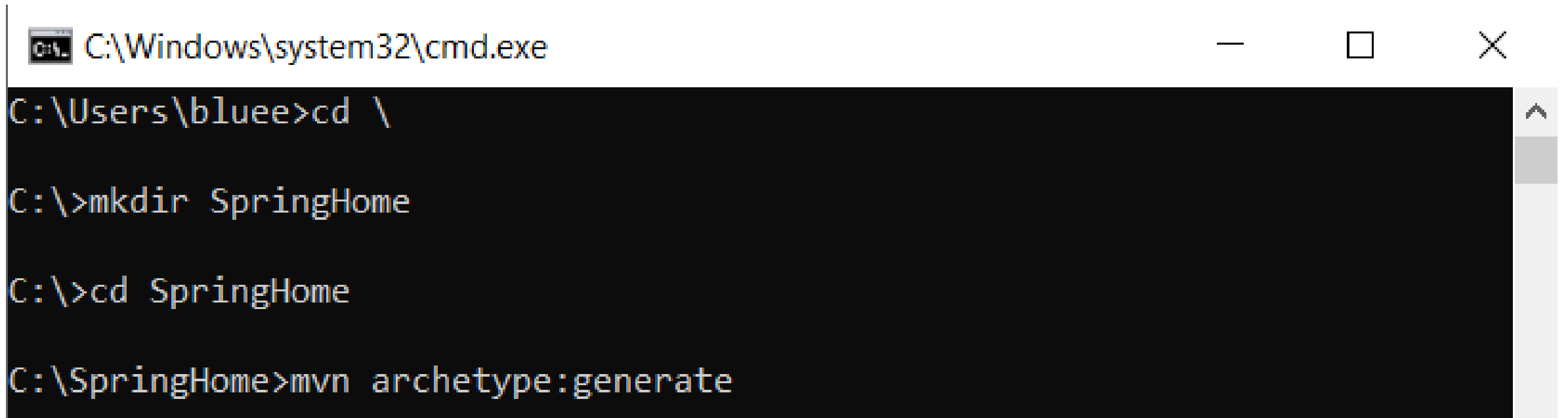


```
C:\Windows\system32\cmd.exe

C:\Users\bluee>mvn -version
Apache Maven 3.6.2 (40f52333136460af0dc0d7232c0dc0bcf0d9e117; 2019-08-28T00:06:16+09:00)
Maven home: C:\Program Files\apache-maven-3.6.2\bin\..
Java version: 1.8.0_221, vendor: Oracle Corporation, runtime: C:\Program Files\Java\jdk1.8.0_221\jre
Default locale: en_US, platform encoding: Cp1252
OS name: "windows 10", version: "10.0", arch: "amd64", family: "windows"
```

Maven Project

\$ **mvn archetype:generate**



```
C:\Windows\system32\cmd.exe

C:\Users\bluee>cd \

C:\>mkdir SpringHome

C:\>cd SpringHome

C:\SpringHome>mvn archetype:generate
```

Maven Project (Cont.)

```
C:\Windows\system32\cmd.exe - mvn archetype:generate

2485: remote -> top.lshaci:framework-archetype (top lshaci framework maven archetype)
2486: remote -> top.marchand.archetype:sie-xf-prio-dep-import-generic ([ELS] Mod0le de projet d'import Flash bas0 sur l'importeur g0n0rique)
2487: remote -> tr.com.lucidcode:kite-archetype (A Maven Archetype that allows users to create a Fresh Kite project)
2488: remote -> tr.com.obss.sdlc.archetype:obss-archetype-java (This archetype provides a common skelton for the Java packages.)
2489: remote -> tr.com.obss.sdlc.archetype:obss-archetype-webapp (This archetype provides a skelton for the Java Web Application packages.)
2490: remote -> ua.co.gravy.archetype:single-project-with-junit-and-slf4j (Create a single project with junit, Mockito and slf4j dependencies.)
2491: remote -> uk.ac.ebi.gxa:atlas-archetype (Archetype for generating a custom Atlas webapp)
2492: remote -> uk.ac.gate:gate-plugin-archetype (Maven archetype to create a new GATE plugin project.)
2493: remote -> uk.ac.gate:gate-pr-archetype (Maven archetype to create a new GATE plugin project including a sample PR class (an empty LanguageAnalyser).)
2494: remote -> uk.ac.nactem.argo:argo-analysis-engine-archetype (An archetype which contains a sample Argo (UIMA) Analysis Engine)
2495: remote -> uk.ac.nactem.argo:argo-reader-archetype (An archetype which contains a sample Argo (UIMA) Reader)
2496: remote -> uk.ac.rdg.resc:edal-ncwms-based-webapp (-)
2497: remote -> uk.co.nemstix:basic-javaee7-archetype (A basic Java EE7 Maven archetype)
2498: remote -> uk.co.solong:angular-spring-archetype (So Long archetype for RESTful spring services with an AngularJS frontend. Includes debian deployment)
2499: remote -> us.fatehi:schemacrawler-archetype-maven-project (-)
2500: remote -> us.fatehi:schemacrawler-archetype-plugin-command (-)
2501: remote -> us.fatehi:schemacrawler-archetype-plugin-dbconnector (-)
2502: remote -> us.fatehi:schemacrawler-archetype-plugin-lint (-)
2503: remote -> ws.osiris:osiris-archetype (Maven Archetype for Osiris)
2504: remote -> xyz.luan.generator:xyz-gae-generator (-)
2505: remote -> xyz.luan.generator:xyz-generator (-)
2506: remote -> za.co.absa.hyperdrive:component-archetype (-)
Choose a number or apply filter (format: [groupId:]artifactId, case sensitive contains): 1430:
```

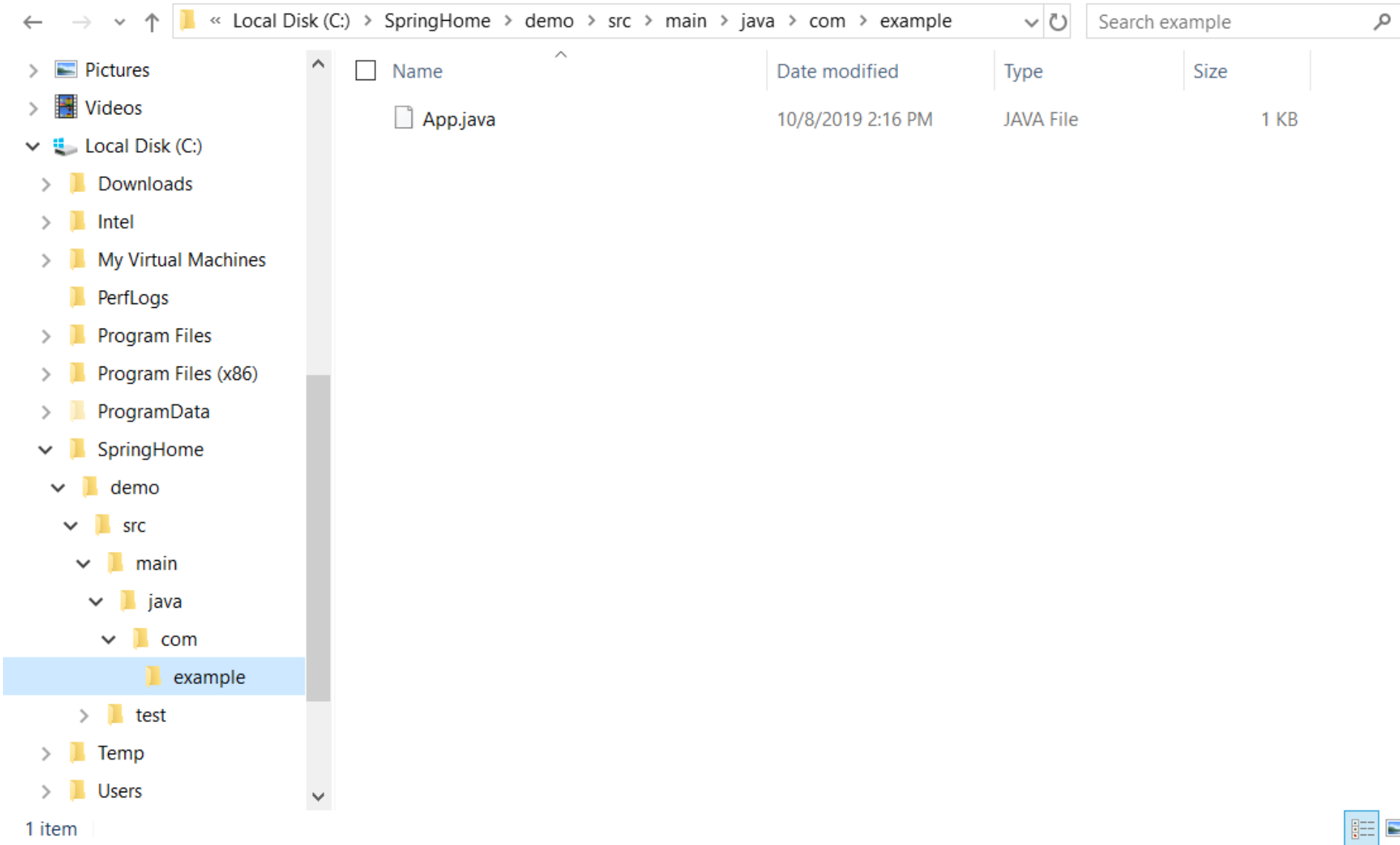
Maven Project (Cont.)

```
1 Choose a number or apply filter (format: [groupId:]artifactId, case sensitive contains): 1430:
2 Choose org.apache.maven.archetypes:maven-archetype-quickstart version:
3 1: 1.0-alpha-1
4 2: 1.0-alpha-2
5 3: 1.0-alpha-3
6 4: 1.0-alpha-4
7 5: 1.0
8 6: 1.1
9 7: 1.3
0 8: 1.4
Choose a number: 8: 
```

Maven Project (Cont.)

```
Choose a number: 8:
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-quickstart/
1.4/maven-archetype-quickstart-1.4.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-quickstart/1
.4/maven-archetype-quickstart-1.4.pom (1.6 kB at 4.7 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-bundles/1.4
/maven-archetype-bundles-1.4.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-bundles/1.4/
maven-archetype-bundles-1.4.pom (4.5 kB at 13 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-quickstart/
1.4/maven-archetype-quickstart-1.4.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-quickstart/1
.4/maven-archetype-quickstart-1.4.jar (7.1 kB at 19 kB/s)
Define value for property 'groupId': com.example
Define value for property 'artifactId': demo
Define value for property 'version' 1.0-SNAPSHOT: :
Define value for property 'package' com.example: :
Confirm properties configuration:
groupId: com.example
artifactId: demo
version: 1.0-SNAPSHOT
package: com.example
Y: :
```


Maven Project (Cont.)



Maven Project (Cont.)

\$ **mvn compile**

```
C:\SpringHome>cd demo

C:\SpringHome\demo>mvn compile
[INFO] Scanning for projects...
[INFO]
[INFO] -----< com.example:demo >-----
[INFO] Building demo 1.0-SNAPSHOT
[INFO] -----[ jar ]-----
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-resources-plugin/3.0.2/m
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-compiler-javac/2.8.4/plexus-c
ompiler-javac-2.8.4.jar (21 kB at 16 kB/s)
[INFO] Changes detected - recompiling the module!
[INFO] Compiling 1 source file to C:\SpringHome\demo\target\classes
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 39.171 s
[INFO] Finished at: 2019-10-08T14:29:01+09:00
[INFO] -----

C:\SpringHome\demo>
```

Maven Project (Cont.)

\$ **mvn test**

```
C:\SpringHome\demo>mvn test
[INFO] Scanning for projects...
[INFO]
[INFO] -----< com.example:demo >-----
[INFO] Building demo 1.0-SNAPSHOT
[INFO] -----[ jar ]-----
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-surefire-plugin/2.22.1/maven-surefire-plugin-2.22.1.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-surefire-plugin/2.22.1/maven-surefire-plugin-2.22.1.pom (8.5 kB at 247 kB/s)
[INFO]
[INFO] -----
[INFO] T E S T S
[INFO] -----
[INFO] Running com.example.AppTest
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.032 s - in com.example.AppTest
[INFO]
[INFO] Results:
[INFO]
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0
[INFO]
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 21.830 s
[INFO] Finished at: 2019-10-08T14:34:56+09:00
[INFO] -----
C:\SpringHome\demo>
```

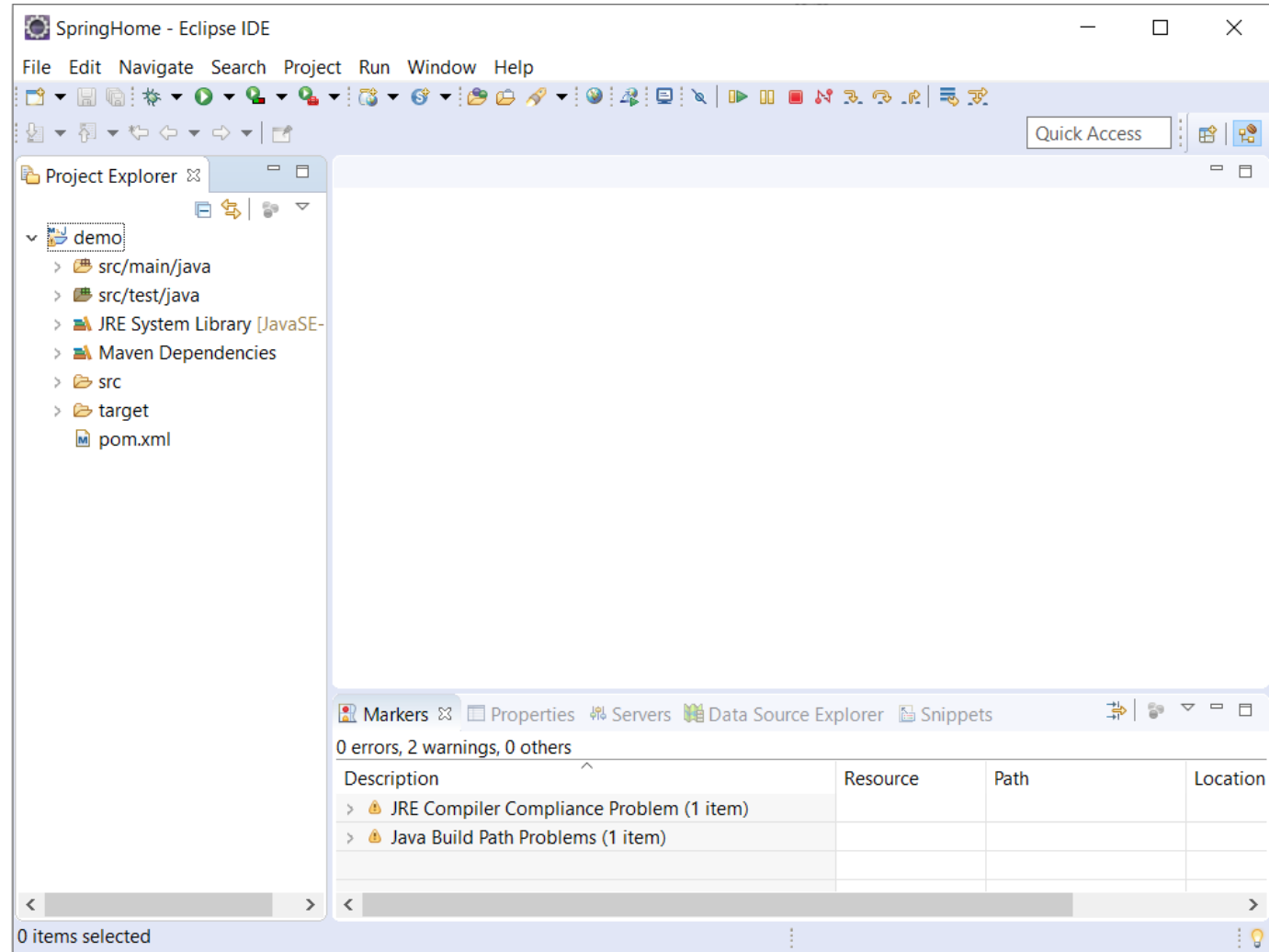
Maven Project (Cont.)

\$ **mvn package**

```
C:\SpringHome\demo>mvn package
[INFO] Scanning for projects...
[INFO]
[INFO] -----< com.example:demo >-----
[INFO] Building demo 1.0-SNAPSHOT
[INFO] -----[ jar ]-----
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-jar-plugin/3.0.2/maven-jar-plugin-3.0.2.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-jar-plugin/3.0.2/maven-jar-plugin-3.0.2.jar (426 kB at 245 kB/s)
[INFO] Building jar: C:\SpringHome\demo\target\demo-1.0-SNAPSHOT.jar
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 10.342 s
[INFO] Finished at: 2019-10-08T14:39:01+09:00
[INFO] -----
C:\SpringHome\demo>
```


Maven Project (Cont.)

■ Eclipse에서 Maven Project Import 하기



Maven Project (Cont.)

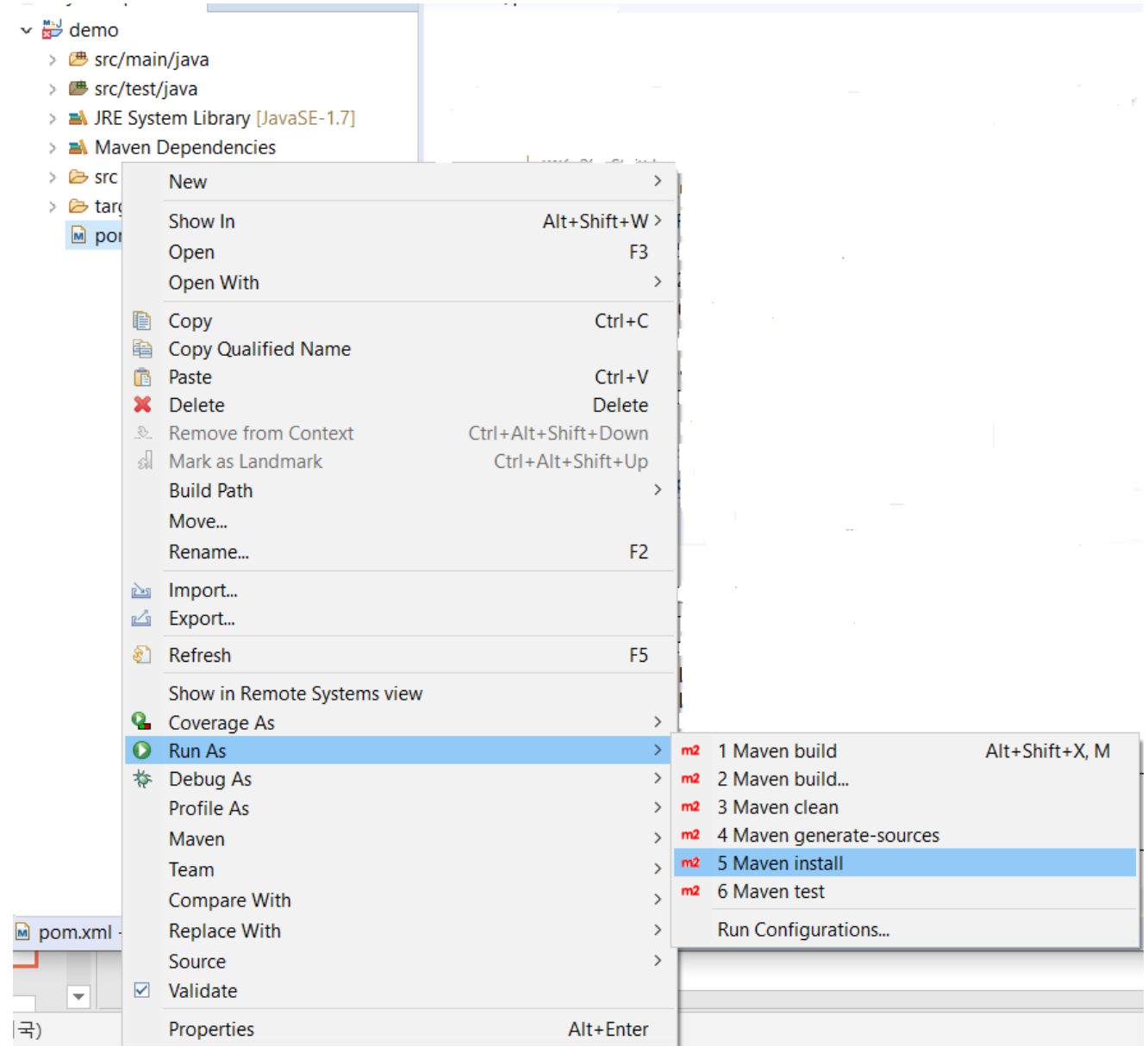
■ Eclipse에서 Maven Project Import 하기



```
demo/pom.xml
22 <dependencies>
23   <dependency>
24     <groupId>junit</groupId>
25     <artifactId>junit</artifactId>
26     <version>4.12</version>
27     <scope>test</scope>
28   </dependency>
29   <!-- https://mvnrepository.com/artifact/org.springframework/spring-core -->
30   <dependency>
31     <groupId>org.springframework</groupId>
32     <artifactId>spring-context</artifactId>
33     <version>5.2.0.RELEASE</version>
34   </dependency>
35 </dependencies>
36
37 <build>
38   <pluginManagement>
39     <plugins>
40       <plugin>
41         <artifactId>maven-compiler-plugin</artifactId>
42         <configuration>
43           <source>1.8</source>
44           <target>1.8</target>
45           <encoding>${project.build.sourceEncoding}</encoding>
46         </configuration>
47       </plugin>
48     </plugins>
49   </pluginManagement>
50 </build>
```

Maven Project (Cont.)

- Eclipse에서 Maven Project Import 하기



Mav

Ecli

SpringHome - demo/pom.xml - Eclipse IDE

File Edit Navigate Search Project Run Design Window Help

Project Explorer

- demo
 - src/main/java
 - src/test/java
 - JRE System Library [JavaSE-1.7]
 - Maven Dependencies
 - src
 - target
 - pom.xml

demo/pom.xml

Dependency Hierarchy [test]

Filter:

Dependency Hierarchy

- junit : 4.12 [test]
 - hamcrest-core : 1.3 [test]
- spring-context : 5.2.0.RELEASE [compile]
 - spring-aop : 5.2.0.RELEASE [compile]
 - spring-beans : 5.2.0.RELEASE [compile]
 - spring-core : 5.2.0.RELEASE [compile]
 - spring-beans : 5.2.0.RELEASE [compile]
 - spring-core : 5.2.0.RELEASE [compile]
 - spring-core : 5.2.0.RELEASE [compile]
 - spring-jcl : 5.2.0.RELEASE [compile]
 - spring-expression : 5.2.0.RELEASE [compile]
 - spring-core : 5.2.0.RELEASE [compile]

Resolved Dependencies

- hamcrest-core : 1.3 [test]
- junit : 4.12 [test]
- spring-aop : 5.2.0.RELEASE [compile]
- spring-beans : 5.2.0.RELEASE [compile]
- spring-context : 5.2.0.RELEASE [compile]
- spring-core : 5.2.0.RELEASE [compile]
- spring-expression : 5.2.0.RELEASE [compile]
- spring-jcl : 5.2.0.RELEASE [compile]

Overview Dependencies Dependency Hierarchy Effective POM pom.xml

Markers Properties Servers Data Source Explorer Snippets Console

```
<terminated> C:\Program Files\Java\jdk1.8.0_221\bin\javaw.exe (Oct 8, 2019, 3:36:50 PM)
[INFO] Downloading from : https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-digest/1.1.1
[INFO] Downloaded from : https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-digest/1.1.1
[INFO] Installing C:\SpringHome\demo\target\demo-1.0-SNAPSHOT.jar to C:\Users\bluee\.m2\repository\
[INFO] Installing C:\SpringHome\demo\pom.xml to C:\Users\bluee\.m2\repository\com\example\demo\1.0-SNAPSHOT
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 30.557 s
[INFO] Finished at: 2019-10-08T15:37:26+09:00
[INFO] -----
```

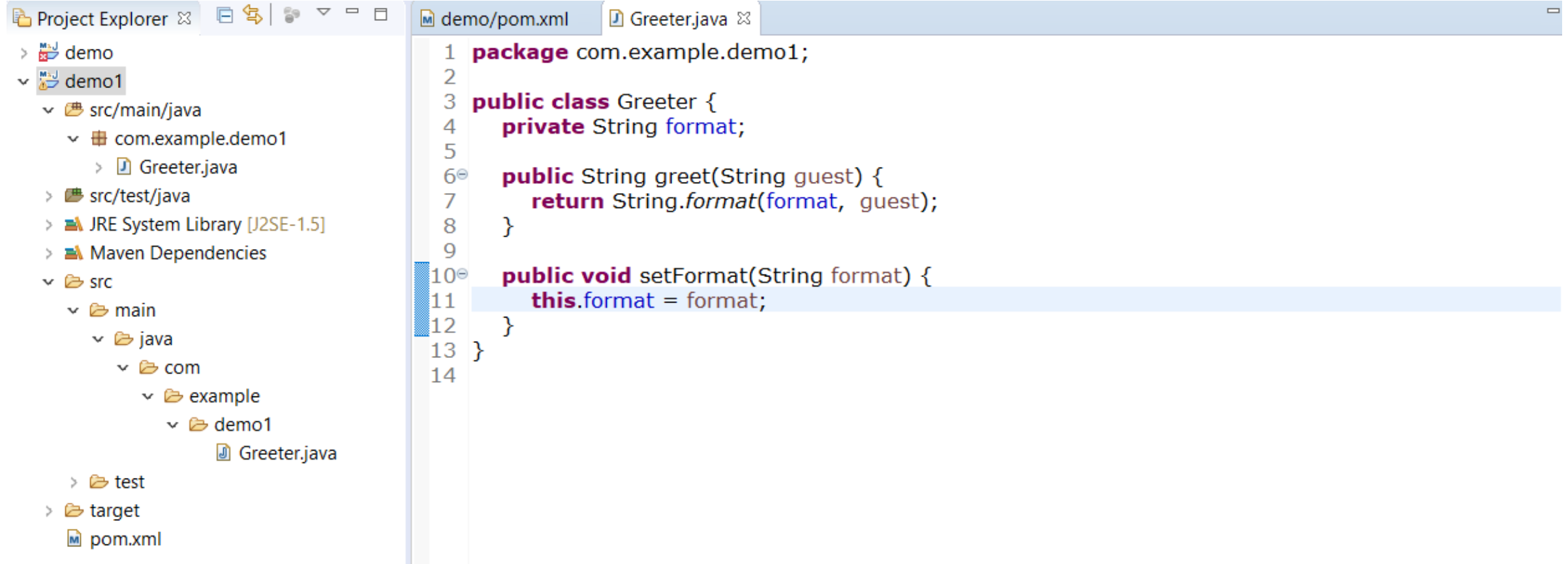
Writable Smart Insert 45 : 66 : 1373



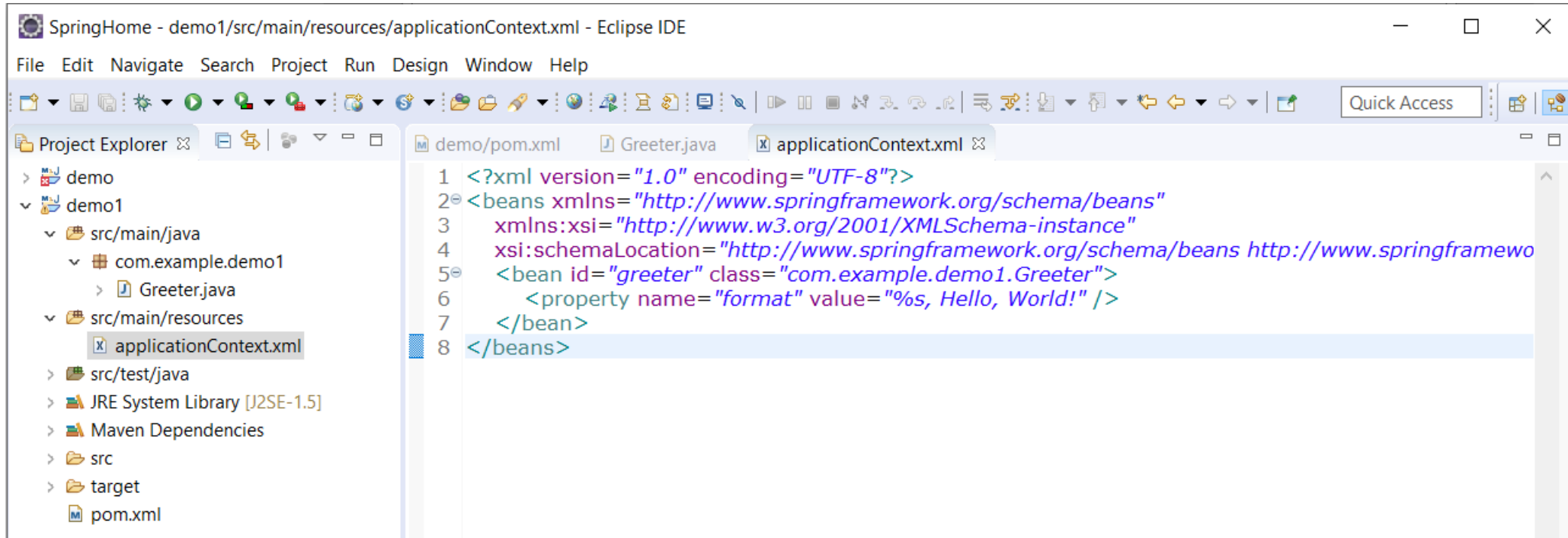
IV. Maven Project In Eclipse



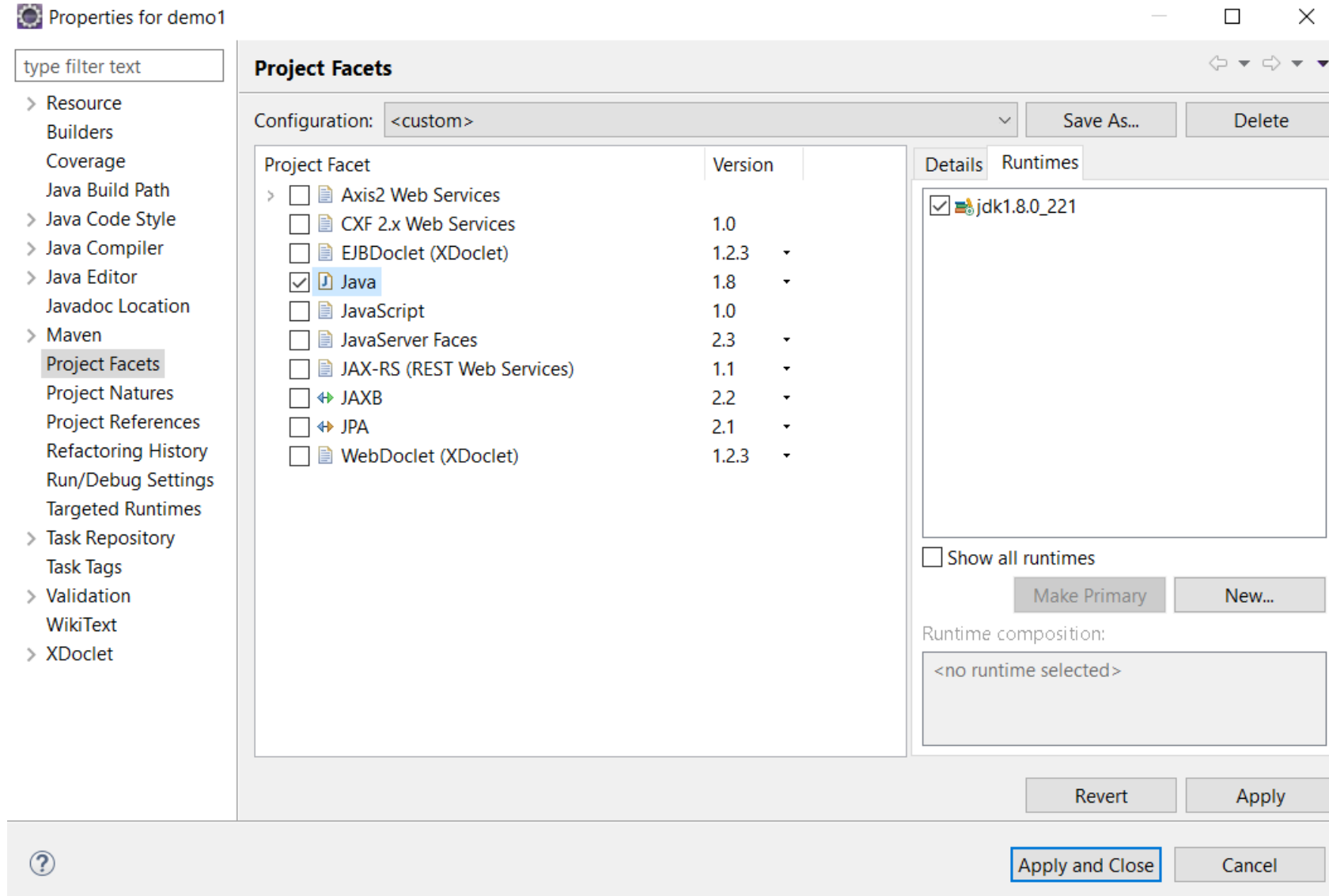
Maven Project in Eclipse



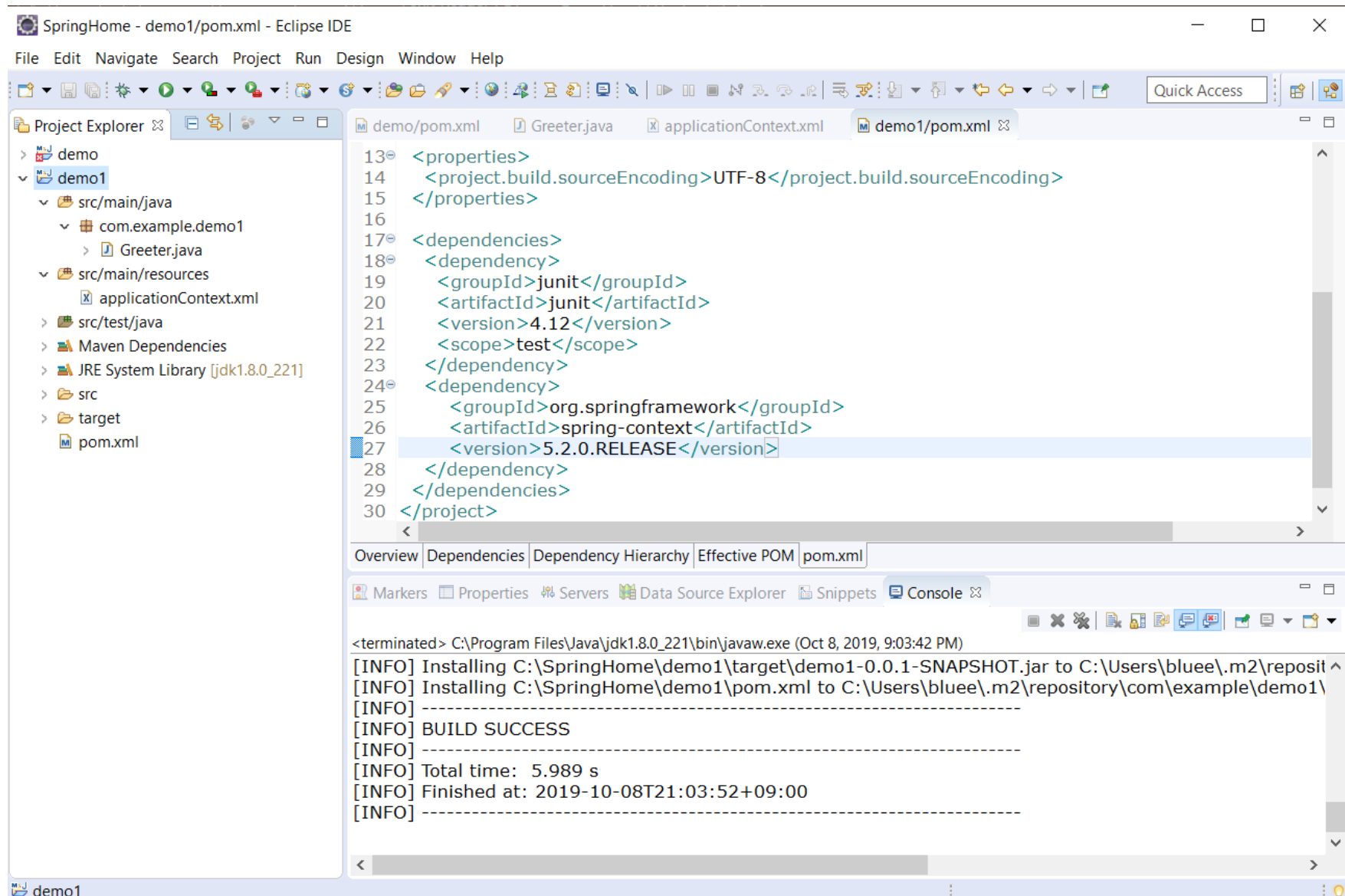
Maven Project in Eclipse (Cont.)



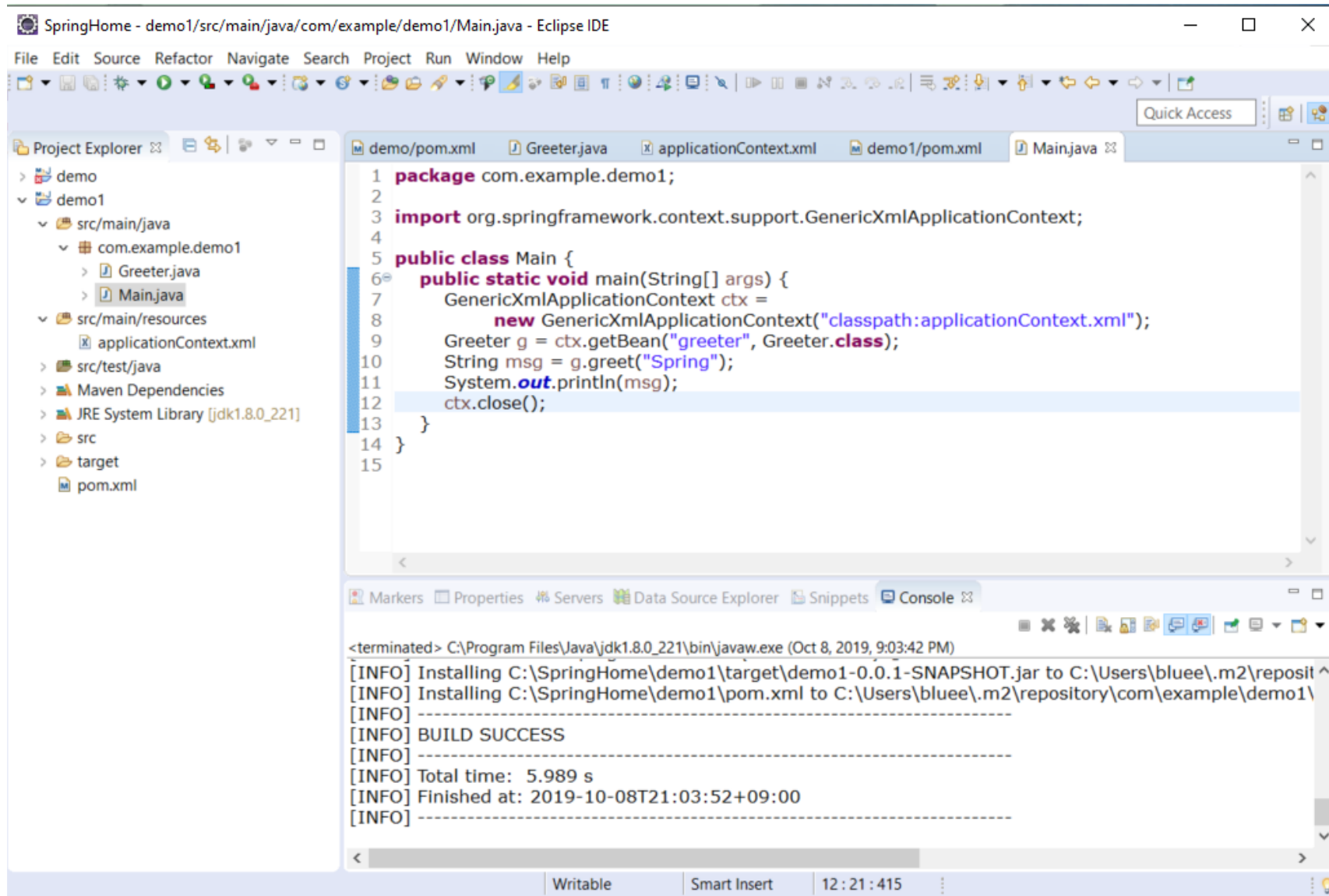
Maven Project in Eclipse (Cont.)



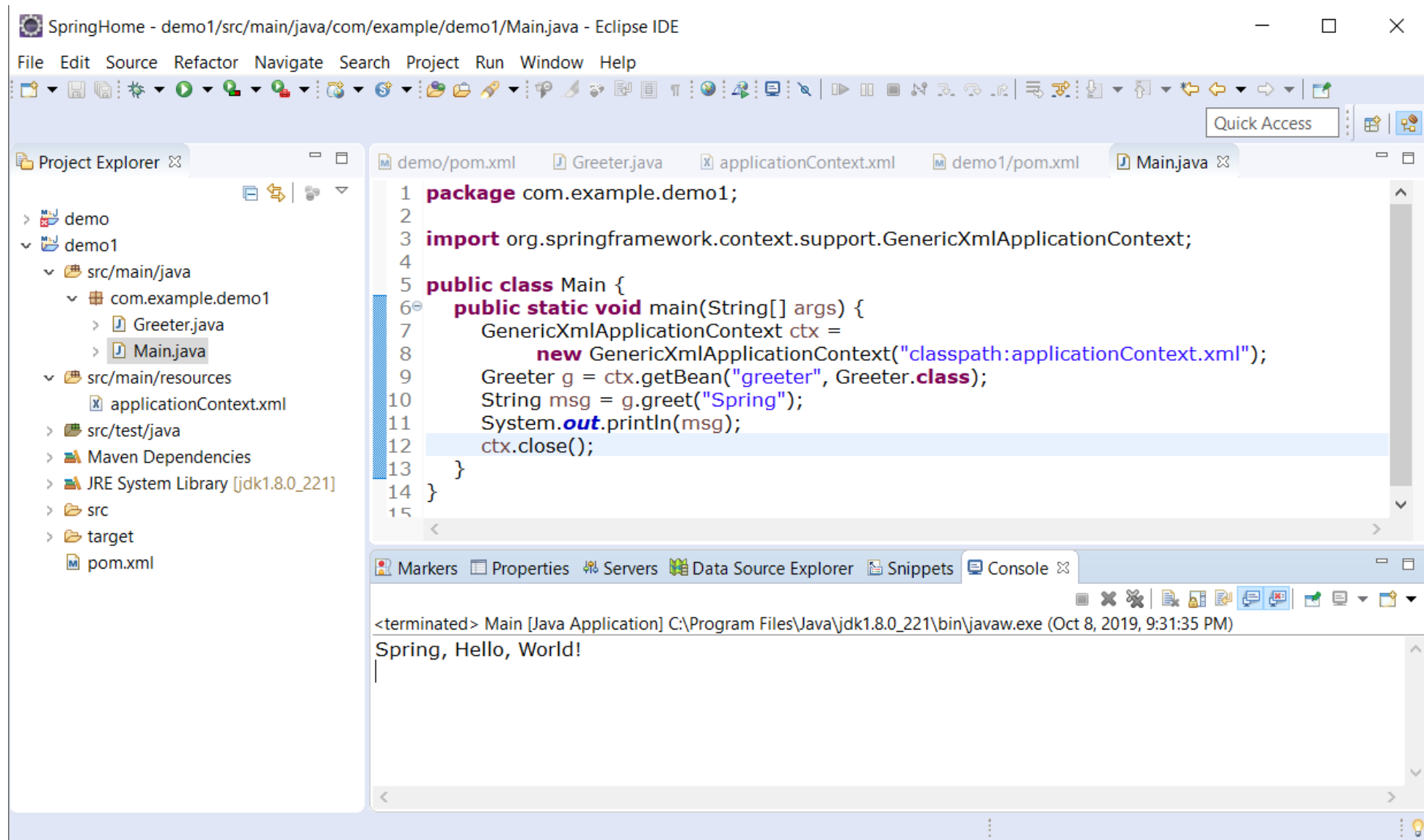
Maven Project in Eclipse (Cont.)



Maven Project in Eclipse (Cont.)



Maven Project in Eclipse (Cont.)






V. Tomcat 9.0.26




Tomcat Installation

■ <http://tomcat.apache.org/>



Apache Tomcat®



[Save the date!](#)

Apache Tomcat



- Home
- Taglibs
- Maven Plugin

Download

- Which version?
- Tomcat 9
- Tomcat 8
- Tomcat 7
- Tomcat Connectors
- Tomcat Native
- Taglibs
- Archives

Documentation

- Tomcat 9.0
- Tomcat 8.5
- Tomcat 7.0



Apache Tomcat

The Apache Tomcat® software is an open source implementation of the Java Servlet, JavaServer Pages, Java Expression Language and Java WebSocket technologies. The Java Servlet, JavaServer Pages, Java Expression Language and Java WebSocket specifications are developed under the [Java Community Process](#).

The Apache Tomcat software is developed in an open and participatory environment and released under the [Apache License version 2](#). The Apache Tomcat project is intended to be a collaboration of the best-of-breed developers from around the world. We invite you to participate in this open development project. To learn more about getting involved, [click here](#).

Apache Tomcat software powers numerous large-scale, mission-critical web applications across a diverse range of industries and organizations. Some of these users and their stories are listed on the [PoweredBy](#) wiki page.

Apache Tomcat, Tomcat, Apache, the Apache feather, and the Apache Tomcat project logo are trademarks of the Apache Software Foundation.

Tomcat 9.0.26 Released

2019-09-19

The Apache Tomcat Project is proud to announce the release of version 9.0.26 of Apache Tomcat. The notable changes compared to 9.0.24 include:

- Update to Commons Daemon 1.2.1 to pick up fixes for regressions in Commons Daemon 1.2.0, most notably a failure to start when using a 32-bit JVM on Windows.
- Avoid an NPE when accessing an https port using http.
- Correct the invalid automatic module names for the embedded JARs.
- Fix a potential hang when using HTTP/2 with the asynchronous Servlet API.

Full details of these changes, and all the other changes, are available in the [Tomcat 9 changelog](#).

[Download](#)

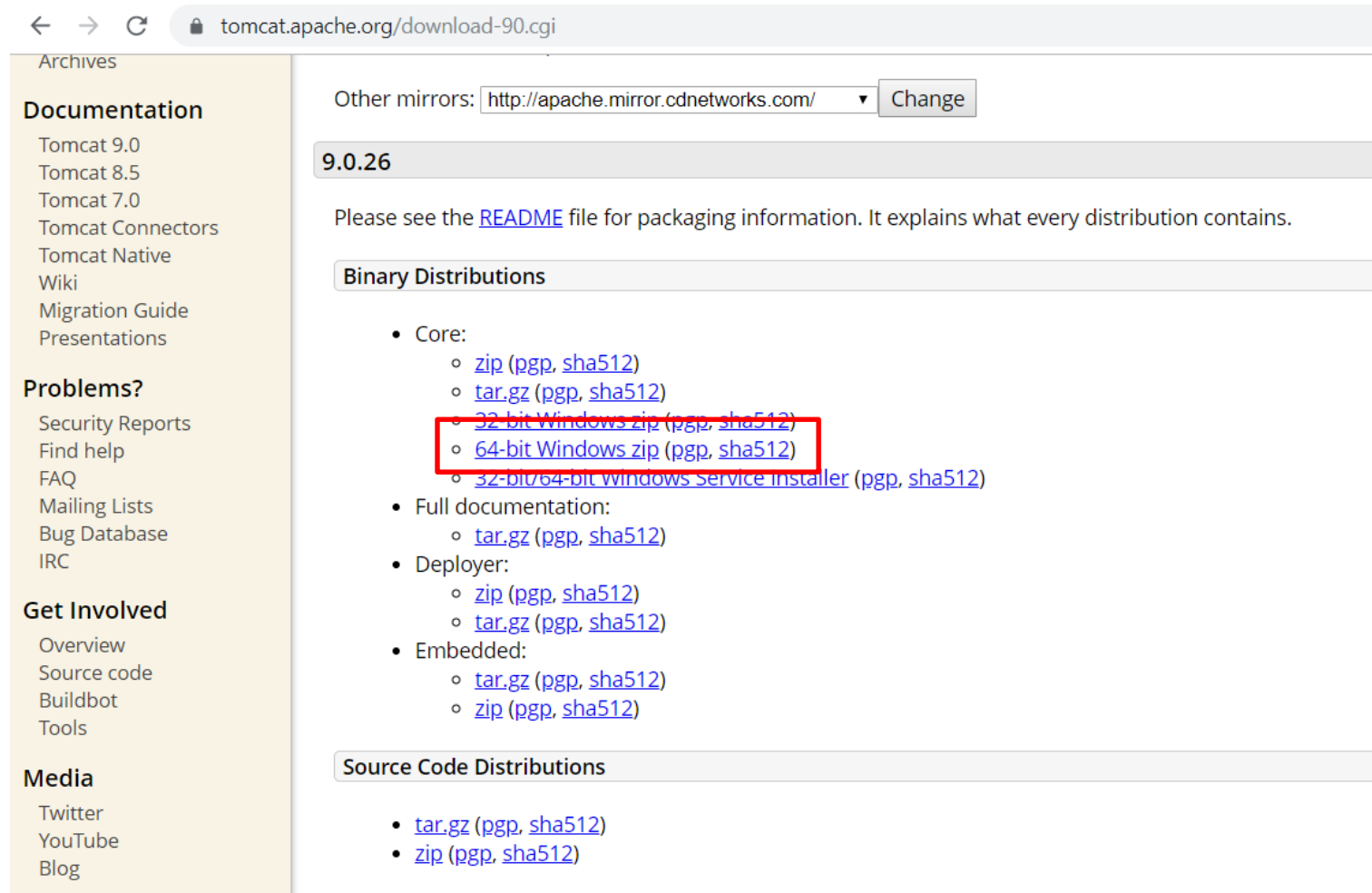
Tomcat Installation (Cont.)

- <http://tomcat.apache.org/whichversion.html>

Servlet Spec	JSP Spec	EL Spec	WebSocket Spec	JASPIC Spec	Apache Tomcat Version	Latest Released Version	Supported Java Versions
4.0	2.3	3.0	1.1	1.1	9.0.x	9.0.26	8 and later
3.1	2.3	3.0	1.1	1.1	8.5.x	8.5.46	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	7.0.96	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

Tomcat Installation (Cont.)

- <https://tomcat.apache.org/download-90.cgi>



The screenshot shows the Tomcat 9.0.26 download page. The browser address bar displays 'tomcat.apache.org/download-90.cgi'. On the left, a sidebar contains navigation links under 'Archives', 'Documentation', 'Problems?', 'Get Involved', and 'Media'. The main content area shows 'Other mirrors' with a dropdown menu set to 'http://apache.mirror.cdnetworks.com/' and a 'Change' button. Below this, the version '9.0.26' is displayed. A message states: 'Please see the [README](#) file for packaging information. It explains what every distribution contains.' The 'Binary Distributions' section lists several options: 'Core' (zip, tar.gz, 32-bit Windows zip, 64-bit Windows zip, 32-bit/64-bit Windows Service Installer), 'Full documentation' (tar.gz), 'Deployer' (zip, tar.gz), and 'Embedded' (tar.gz, zip). The '64-bit Windows zip' link is highlighted with a red rectangle. The 'Source Code Distributions' section lists 'tar.gz' and 'zip'.

Archives

Documentation

- Tomcat 9.0
- Tomcat 8.5
- Tomcat 7.0
- Tomcat Connectors
- Tomcat Native
- Wiki
- Migration Guide
- Presentations

Problems?

- Security Reports
- Find help
- FAQ
- Mailing Lists
- Bug Database
- IRC

Get Involved

- Overview
- Source code
- Buildbot
- Tools

Media

- Twitter
- YouTube
- Blog

Other mirrors:

9.0.26

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

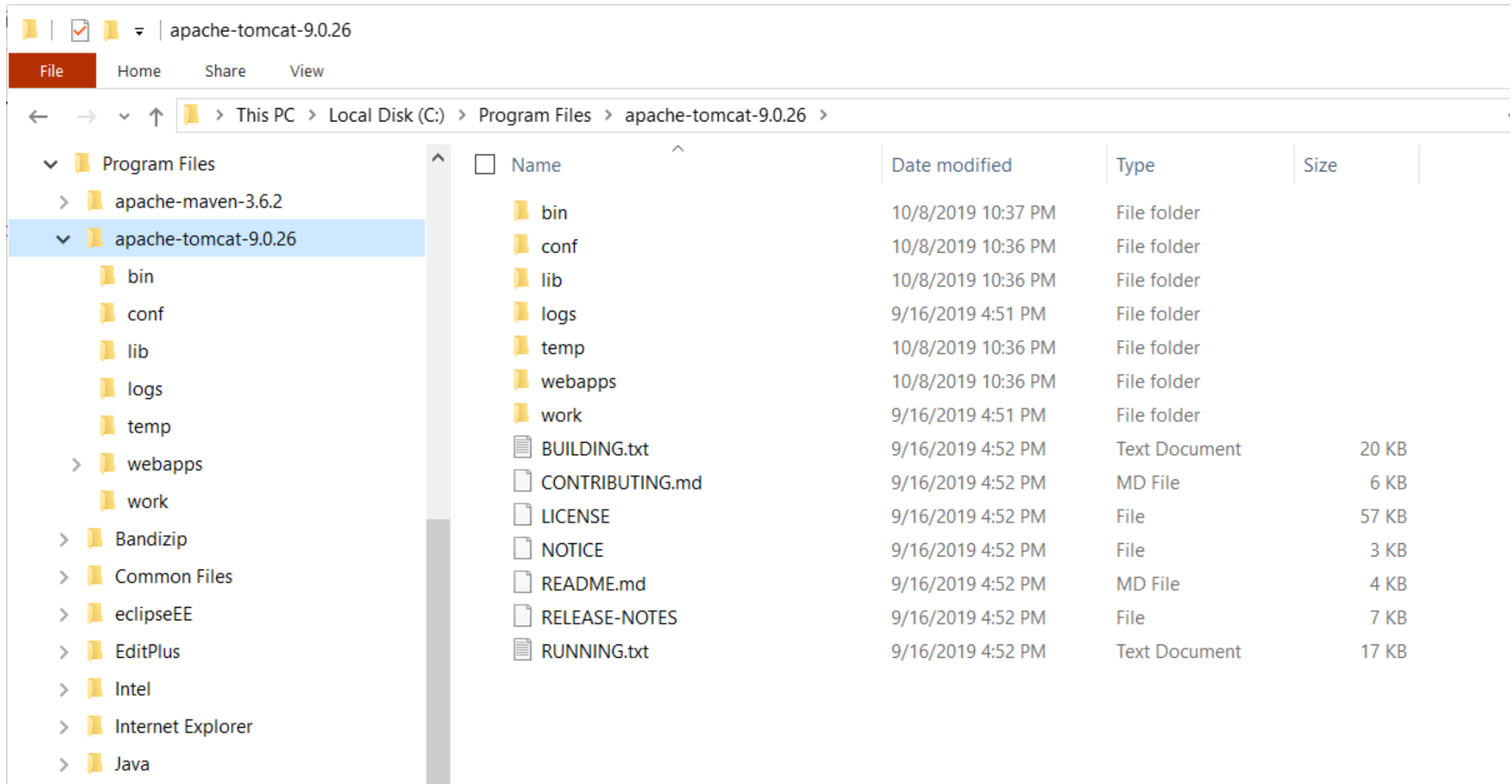
Binary Distributions

- 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 \(pgp, sha512\)](#)

Source Code Distributions

- [tar.gz \(pgp, sha512\)](#)
- [zip \(pgp, sha512\)](#)

Tomcat Installation (Cont.)



Tomcat Installation (Cont.)

C:\Windows\system32\cmd.exe

```
C:\Users\bluee>set CATALINA_HOME  
CATALINA_HOME=C:\Program Files\apache-tomcat-9.0.26
```

```
C:\Users\bluee>set PATH  
Path=C:\Program Files\Java\jdk1.8.0_221\bin;C:\Windows\system32;C:\Windows;C:\Windows\System32\Wbem;C:\Windows\System32\WindowsPowerShell\v1.0\;C:\Windows\System32\OpenSSH\;C:\Program Files\apache-maven-3.6.2\bin;C:\Program Files\apache-tomcat-9.0.26\bin;C:\Users\bluee\AppData\Local\Microsoft\WindowsApps;C:\Program Files\Bandizip\  
PATHEXT=.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH;.MSC
```

Tomcat Configuration

```
C:\Users\bluee>cd %CATALINA_HOME%\bin
```

```
C:\Program Files\apache-tomcat-9.0.26\bin>startup
```

```
Using CATALINA_BASE:  "C:\Program Files\apache-tomcat-9.0.26"
```

```
Using CATALINA_HOME:  "C:\Program Files\apache-tomcat-9.0.26"
```

```
Using CATALINA_TMPDIR: "C:\Program Files\apache-tomcat-9.0.26\temp"
```

```
Using JRE_HOME:       "C:\Program Files\Java\jdk1.8.0_221"
```

```
Using CLASSPATH:      "C:\Program Files\apache-tomcat-9.0.26\bin\bootstrap.jar;C:\Program Files\apache-tomcat-9.0.26\bin\tomcat-juli.jar"
```

```
C:\Program Files\apache-tomcat-9.0.26\bin>
```



Windows Security Alert



Windows Defender Firewall has blocked some features of this app

Windows Defender Firewall has blocked some features of Java(TM) Platform SE binary on all public and private networks.



Name: Java(TM) Platform SE binary

Publisher: Oracle Corporation

Path: C:\program files\java\jdk1.8.0_221\bin\java.exe

Allow Java(TM) Platform SE binary to communicate on these networks:

☐ Private networks, such as my home or work network

☒ Public networks, such as those in airports and coffee shops (not recommended because these networks often have little or no security)

[What are the risks of allowing an app through a firewall?](#)

Allow access


Cancel

Tomcat Configuration (Cont.)


localhost:8080☆

Home Documentation Configuration Examples Wiki Mailing Lists Find Help

Apache Tomcat/9.0.26



If you're seeing this, you've successfully installed Tomcat. Congratulations!



Recommended Reading:
[Security Considerations How-To](#)
[Manager Application How-To](#)
[Clustering/Session Replication How-To](#)

[Server Status](#)
[Manager App](#)
[Host Manager](#)

Developer Quick Start

Tomcat Setup	Realms & AAA	Examples	Servlet Specifications
First Web Application	JDBC DataSources		Tomcat Versions

Managing Tomcat

For security, access to the [manager webapp](#) is restricted. Users are defined in:

```
$CATALINA_HOME/conf/tomcat-users.xml
```

In Tomcat 9.0 access to the manager application is split between different users.
[Read more...](#)

[Release Notes](#)
[Changelog](#)

Documentation

[Tomcat 9.0 Documentation](#)
[Tomcat 9.0 Configuration](#)
[Tomcat Wiki](#)

Find additional important configuration information in:

```
$CATALINA_HOME/RUNNING.txt
```

Developers may be interested in:

[Tomcat 9.0 Bug Database](#)

Getting Help

[FAQ](#) and [Mailing Lists](#)

The following mailing lists are available:

[tomcat-announce](#)
Important announcements, releases, security vulnerability notifications. (Low volume).

[tomcat-users](#)
User support and discussion

[taglibs-user](#)
User support and discussion for [Apache Taglibs](#)

[tomcat-dev](#)
Development related discussions

Tomcat Configuration (Cont.)

- %CATALINA_HOME%/conf/tomcat-users.xml

```
23  NOTE: By default, no user is included in the "manager-gui" role required
24  to operate the "/manager/html" web application. If you wish to use this app,
25  you must define such a user - the username and password are arbitrary. It is
26  strongly recommended that you do NOT use one of the users in the commented out
27  section below since they are intended for use with the examples web
28  application.
29  -->
30  <user username="admin" password="tomcatadmin" roles="admin-gui,manager-gui"/>
31  <!--
32  NOTE: The sample user and role entries below are intended for use with the
33  examples web application. They are wrapped in a comment and thus are ignored
34  when reading this file. If you wish to configure these users for use with the
35  examples web application, do not forget to remove the <!-- ..> that surrounds
36  them. You will also need to set the passwords to something appropriate.
37  -->
```


Tomcat Configuration (Cont.)

- %CATALINA_HOME%/webapps/homecontext.xml 생성

```
<Context path="" docBase="C:/SpringHome" debug="0" reloadable="true"  
    crossContext="true" privileged="true" />
```

Tomcat Configuration (Cont.)

- %CATALINA_HOME%/webapps/ROOT/WEB-INF 복사
- C:/SpringHome 하위에 붙여넣기
- C:/SpringHome/WEB-INF/web.xml 수정

```
1  <?xml version="1.0" encoding="UTF-8"?>
2  <web-app xmlns="http://xmlns.jcp.org/xml/ns/javaee"
3      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
4      xsi:schemaLocation="http://xmlns.jcp.org/xml/ns/javaee
5                          http://xmlns.jcp.org/xml/ns/javaee/web-app_4_0.xsd"
6      version="4.0"
7      metadata-complete="true">
8
9      <display-name>Welcome to Spring Homepage</display-name>
10
11  </web-app>
```

Tomcat Configuration (Cont.)

■ C:/SpringHome/index.html 생성

```
1  <!DOCTYPE html>
2  <html lang="en">
3  <head>
4    <meta charset="UTF-8">
5    <title>Welcome to Spring Homepage</title>
6  </head>
7  <body>
8    <div><span style="font-size:30pt;color:blue">Welcome Spring 5</span></div>
9  </body>
10 </html>
```

Tomcat Configuration (Cont.)

- [Tomcat Web Application Manager]에서 / Path undeploy

Browser window showing the Tomcat Web Application Manager interface at `localhost:8080/manager/html`.

The interface includes the Tomcat logo and the Apache Software Foundation logo.

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

The **Undeploy** button for the `/` path is highlighted with a red box.

Tomcat Configuration (Cont.)

■ [Tomcat Web Application Manager]에서 / Path deploy

- Context Path : /

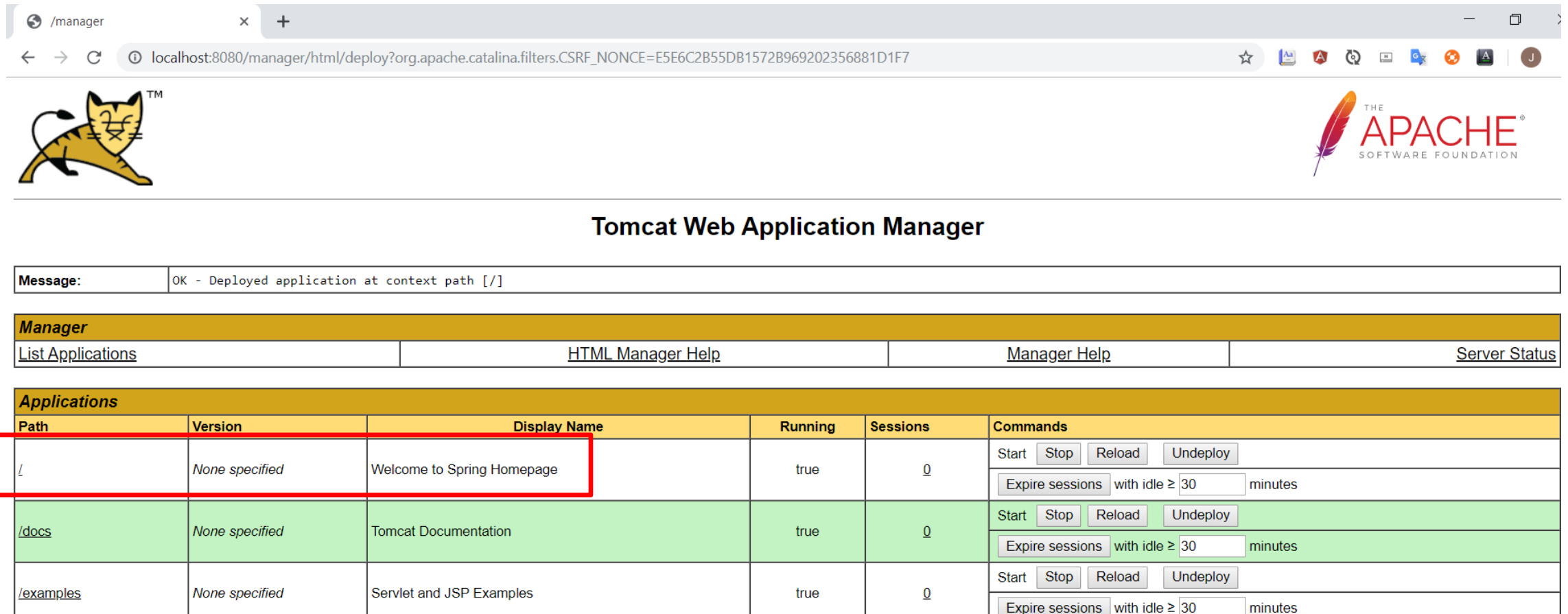
- XML Configuration file path :

C:\Program Files\apache-tomcat-9.0.26\webapps\homecontext.xml

Deploy	
Deploy directory or WAR file located on server	
Context Path:	<input type="text" value="/"/>
Version (for parallel deployment):	<input type="text"/>
XML Configuration file path:	<input type="text" value="webapps\homecontext.xml"/>
WAR or Directory path:	<input type="text"/>
<div>Deploy</div>	

Tomcat Configuration (Cont.)

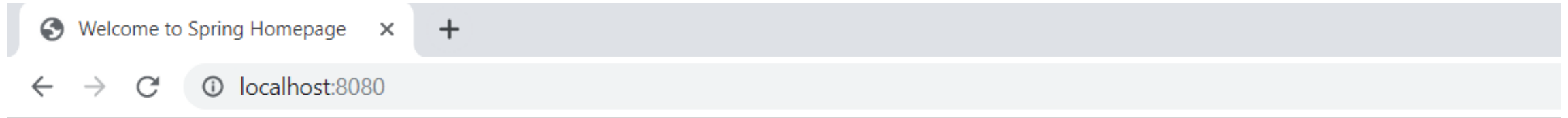
- [Tomcat Web Application Manager]에서 / Path deploy



The screenshot shows the Tomcat Web Application Manager interface in a web browser. The address bar indicates the URL is `localhost:8080/manager/html/deploy?org.apache.catalina.filters.CSRF_NONCE=E5E6C2B55DB1572B969202356881D1F7`. The page features the Tomcat logo on the left and the Apache Software Foundation logo on the right. Below the logos, the title "Tomcat Web Application Manager" is centered. A message box at the top states: "Message: OK - Deployed application at context path [/]". Below this, a navigation bar includes links for "List Applications", "HTML Manager Help", "Manager Help", and "Server Status". The main section, titled "Applications", contains a table with the following data:

Path	Version	Display Name	Running	Sessions	Commands
/	None specified	Welcome to Spring Homepage	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

Tomcat Configuration (Cont.)



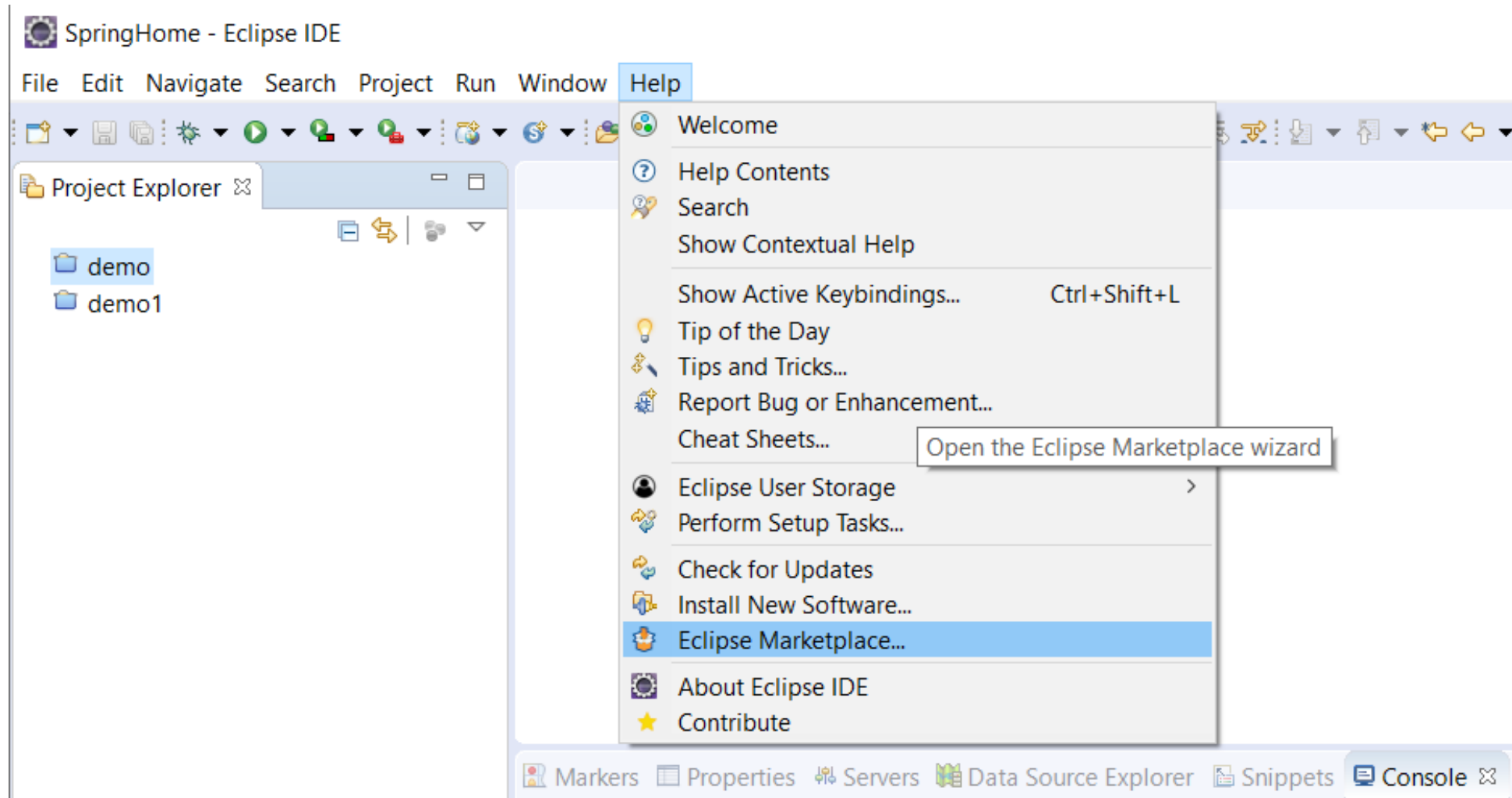
Welcome Spring 5




VI. STS 4.4.0.RELEASE




STS Downloads



STS Downloads (Cont.)

 Eclipse Marketplace



Select solutions to install. Press Install Now to proceed with installation.
Press the "more info" link to learn more about a solution.

Search

Recent

Popular

Favorites


Installed

Research@Eclipse

Find:

★ 12


Installs: **13.2K** (4,107 last month)



Spring Tools 4 - for Spring Boot (aka Spring Tool Suite 4)
4.4.0.RELEASE
Spring Tools 4 is the next generation of Spring Boot tooling for your favorite coding environment. Largely rebuilt from scratch, it provides world-class support...
[more info](#)
by [Pivotal](#), EPL
[spring](#) [Spring IDE](#) [Cloud](#) [Spring Tool Suite](#) [STS](#) ...

★ 2149

Installs: **1.31M** (31,714 last month)



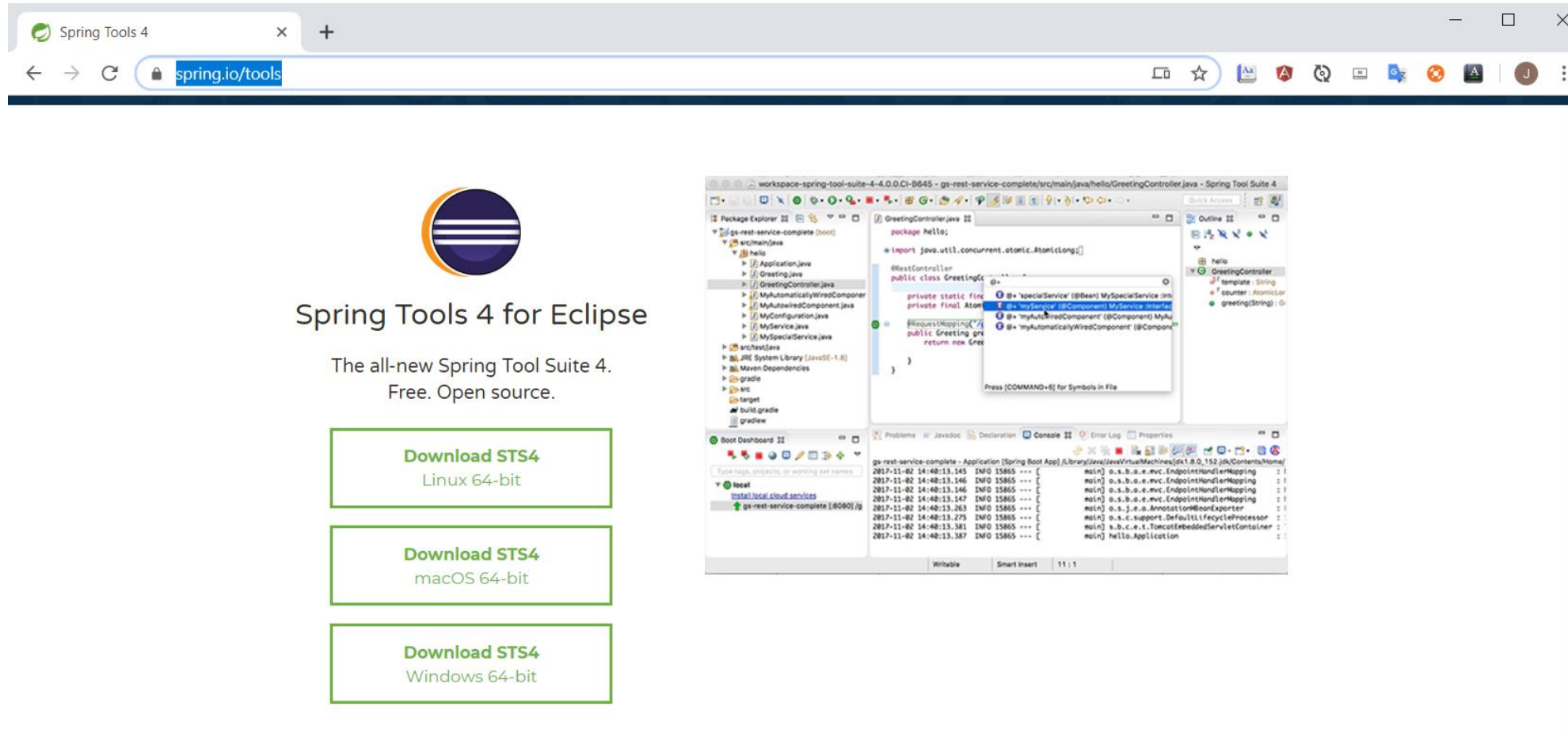
Minimalist Gradle Editor 1.0.1
<https://github.com/Nodeclipse/GradleEditor> Minimalist Gradle Editor for build.gradle files with highlight for keywords, strings and matching brackets and android...
[more info](#)
by [Nodeclipse/Enide](#), GPL
[gradle editor](#) [highlight](#) [build](#) [android](#) ...

★ 91

Installs: **75.2K** (521 last month)

STS Downloads (Cont.)

- <https://spring.io/tools>



The image shows a browser window displaying the Spring Tools 4 website. The website features the Spring logo, the text "Spring Tools 4 for Eclipse", and the tagline "The all-new Spring Tool Suite 4. Free. Open source." Below this, there are three green buttons for downloading STS4 for Linux 64-bit, macOS 64-bit, and Windows 64-bit. To the right of the website screenshot is a screenshot of the Spring Tool Suite 4 IDE interface, showing a Java project named "gs-rest-service-complete" with a "GreetingController.java" file open. The IDE includes a Package Explorer, a Code Editor, an Outline, a Console, and a Boot Dashboard.

Spring Tools 4 for Eclipse

The all-new Spring Tool Suite 4.
Free. Open source.

Download STS4
Linux 64-bit

Download STS4
macOS 64-bit

Download STS4
Windows 64-bit

workspace-spring-tool-suite-4-4.0.0-CH-B645 - gs-rest-service-complete/src/main/java/hello/GreetingController.java - Spring Tool Suite 4

```
package hello;

import java.util.concurrent.atomic.AtomicLong;

@RestController
public class GreetingController {

    private static final AtomicLong counter = new AtomicLong(0);

    @RequestMapping("/hello")
    public Greeting getGreeting() {
        return new Greeting(counter.incrementAndGet(), "Hello, World!");
    }
}
```

Boot Dashboard

Type logs, projects, or working set names

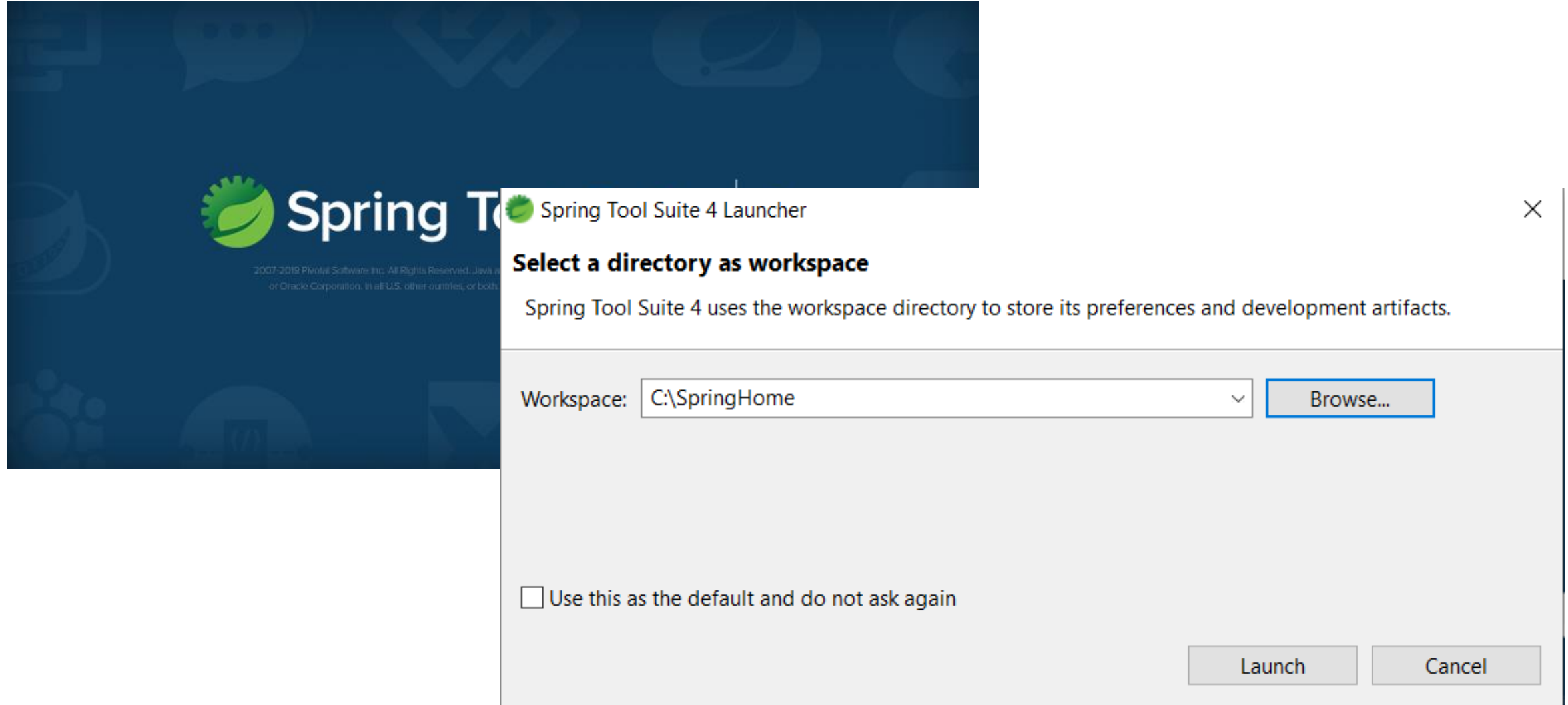
local

gs-rest-service-complete [8080]

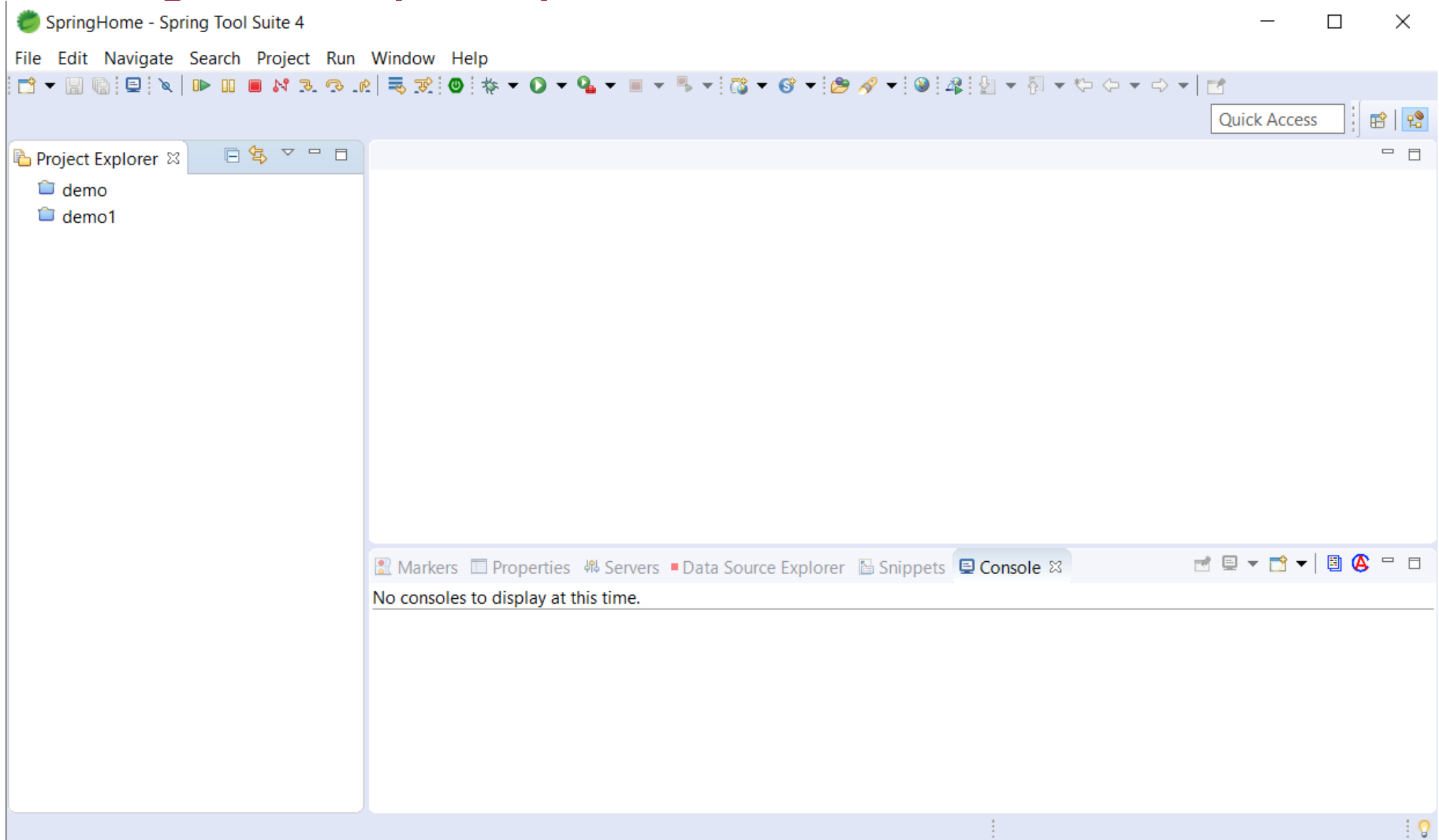
gs-rest-service-complete - Application (Spring Boot App) [Library/Java/JavaVirtualMachines/jdk-11.0.152-jdk/Contents/Home]

```
2017-11-02 14:40:13.145 INFO 15865 --- [main] o.s.b.o.e.mvc.EndpointHandlerMapping : 1
2017-11-02 14:40:13.146 INFO 15865 --- [main] o.s.b.o.e.mvc.EndpointHandlerMapping : 1
2017-11-02 14:40:13.146 INFO 15865 --- [main] o.s.b.o.e.mvc.EndpointHandlerMapping : 1
2017-11-02 14:40:13.147 INFO 15865 --- [main] o.s.b.o.e.mvc.EndpointHandlerMapping : 1
2017-11-02 14:40:13.263 INFO 15865 --- [main] o.s.j.e.a.AnnotationMethodExporter : 1
2017-11-02 14:40:13.275 INFO 15865 --- [main] o.s.c.support.DefaultLifecycleProcessor : 1
2017-11-02 14:40:13.381 INFO 15865 --- [main] s.b.c.e.t.TomcatEmbeddedServletContainer : 1
2017-11-02 14:40:13.387 INFO 15865 --- [main] hello.Application : 1
```

STS Configuration

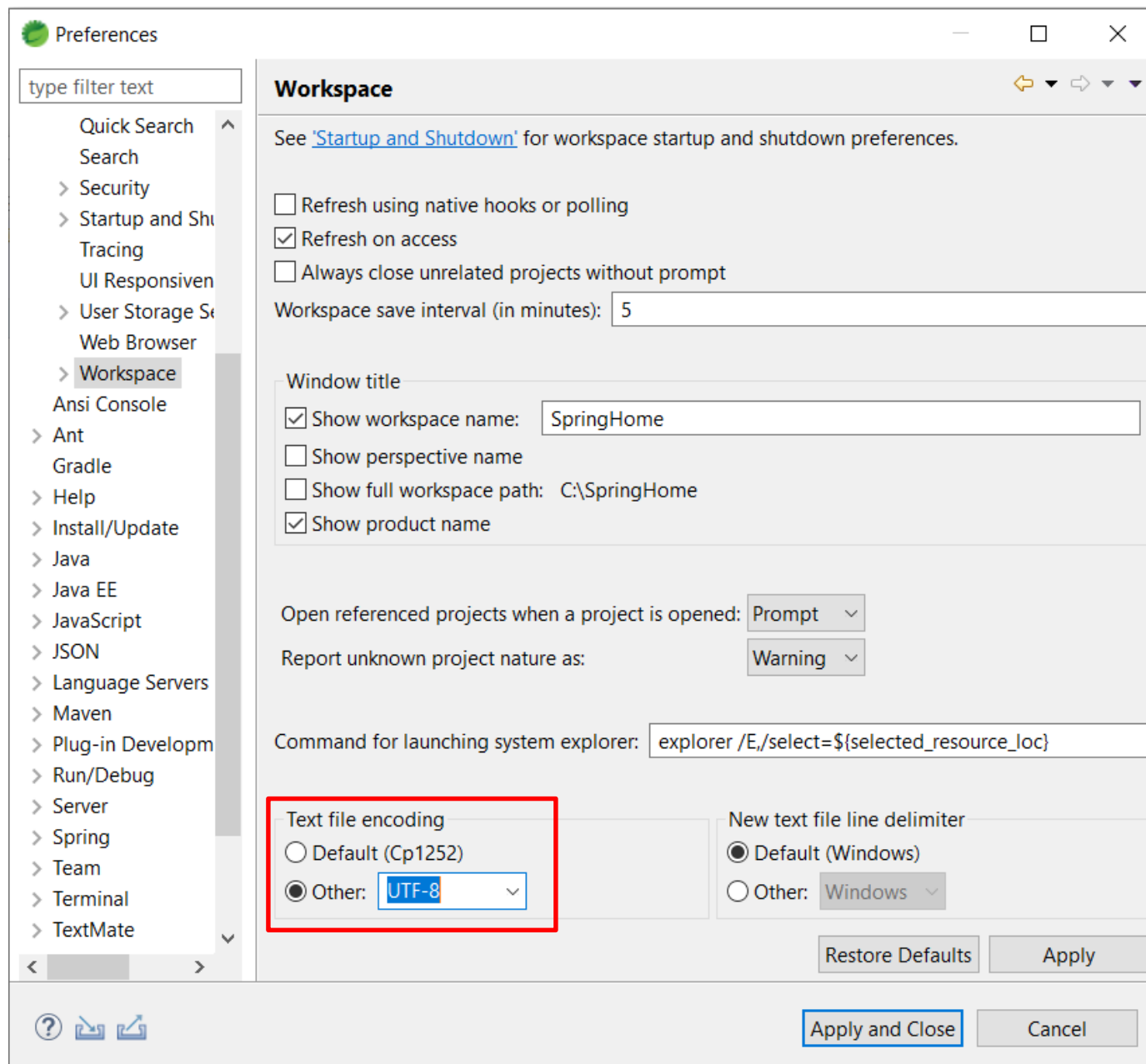


STS Configuration (Cont.)

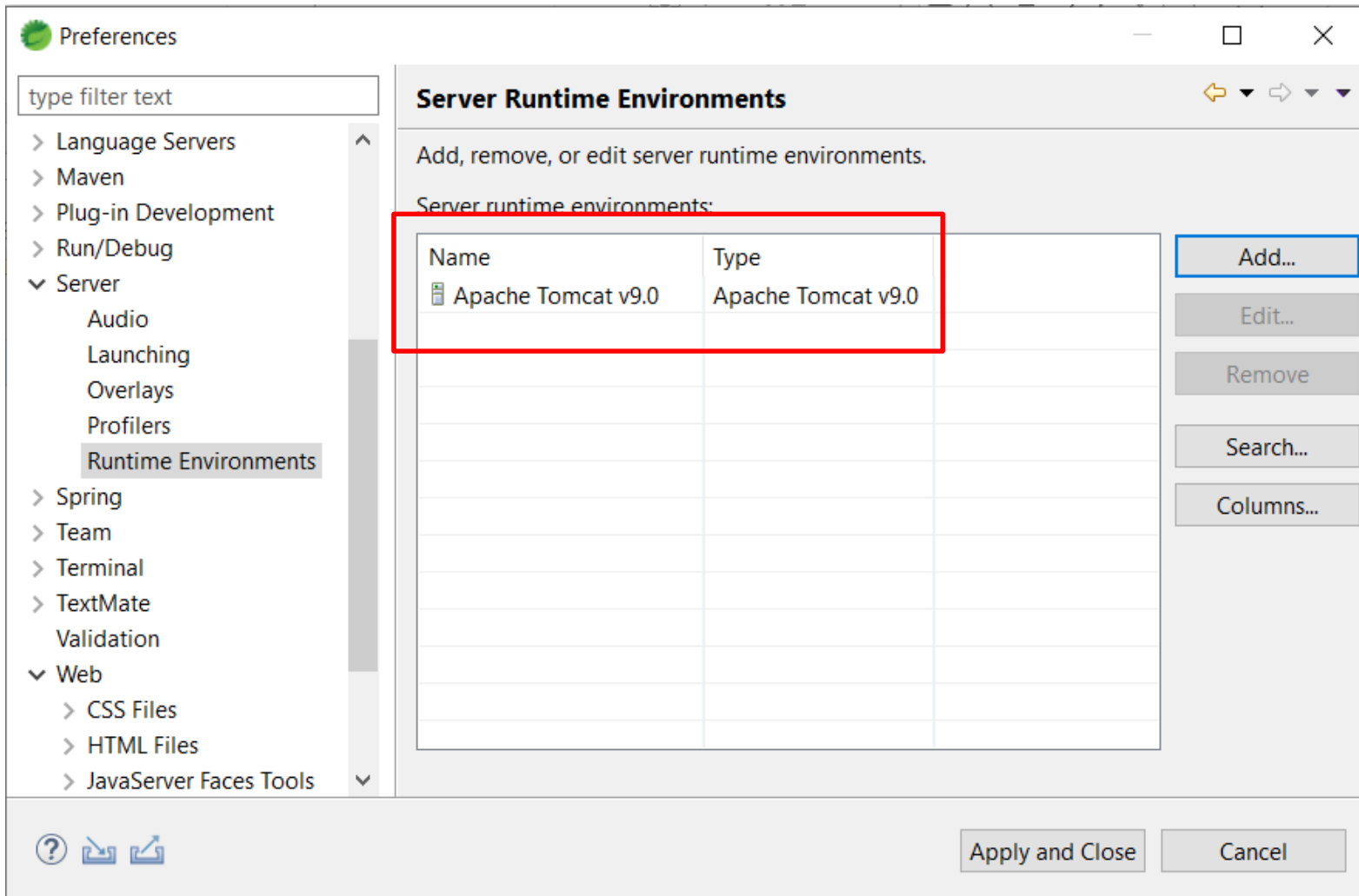


STS Configuration (Cont.)

■ Workspace의 UTF-8 설정하기

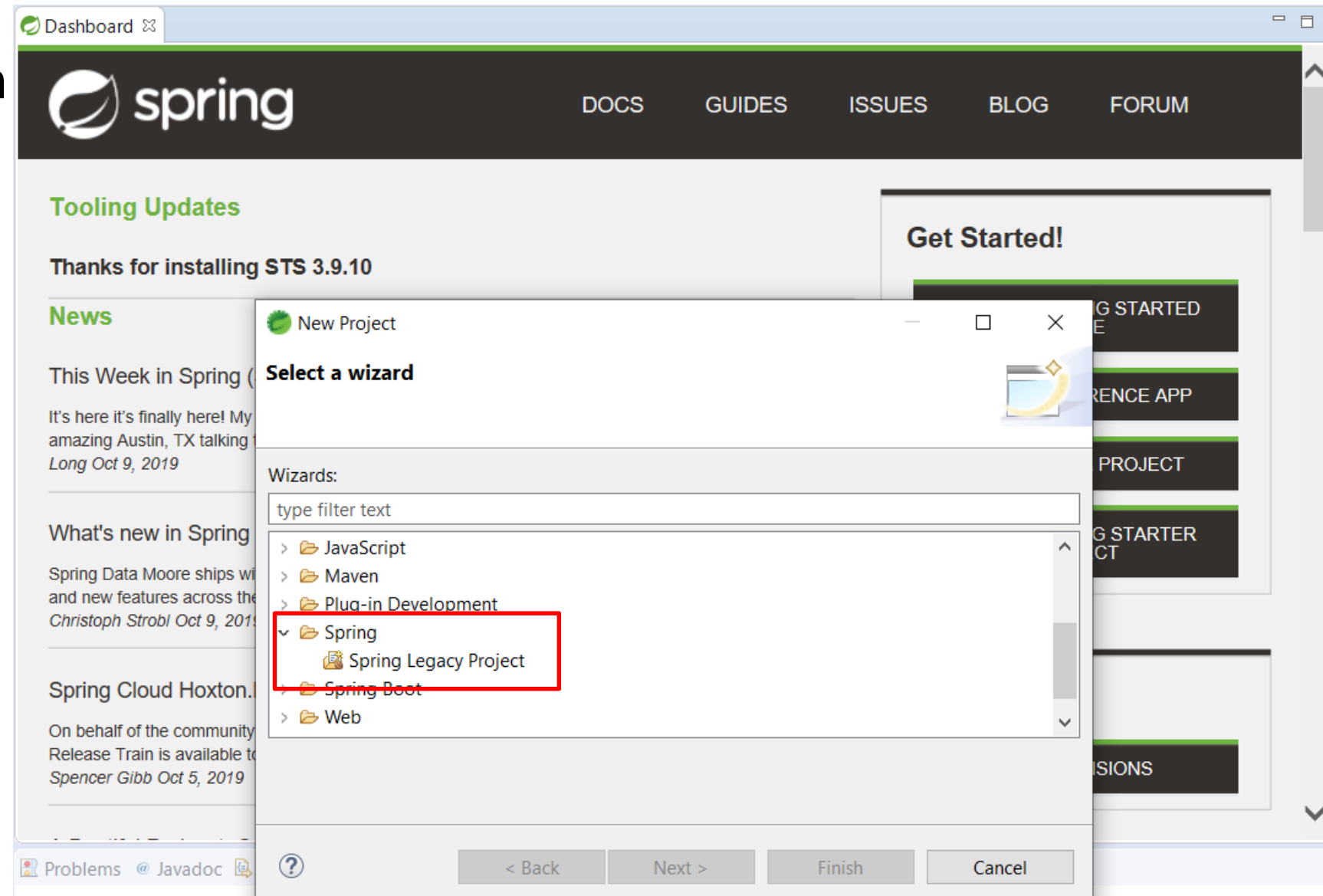


■ STS4에 Tomcat 등록하기



STS Configuration (Cont.)

- STS4에 STS3 Add-On Installation






VII. Lombok v1.18.10



Lombok Installation



Project Lombok v1.18.10 - Installer


Javac (and tools that invoke javac such as *ant* and *maven*)

Lombok works 'out of the box' with javac.
Just make sure the lombok.jar is in your classpath when you compile.


Example: `javac -cp lombok.jar MyCode.java`

IDEs

Lombok can update your Eclipse or eclipse-based IDE to fully support all Lombok features.
Select IDE installations below and hit 'Install/Update'.



☒ C:\Program Files\ eclipseEE\ eclipse.exe



☒ C:\Program Files\ sts-4.4.0.RELEASE\ SpringToolSuite4.exe

Specify location...

Install / Update













[Show me what this installer will do to my IDE installation.](#)


<https://projectlombok.org>

v1.18.10

[View full changelog](#)

Quit Installer

Program Files > eclipseEE				
	Search eclipseEE			
<input type="checkbox"/> Name	Date modified	Type	Size	
 configuration	10/8/2019 11:54 PM	File folder		
 dropins	9/17/2019 2:04 AM	File folder		
 features	10/8/2019 2:56 PM	File folder		
 p2	10/8/2019 11:44 PM	File folder		
 plugins	10/8/2019 3:04 PM	File folder		
 readme	10/8/2019 3:04 PM	File folder		
 .eclipseproduct	9/16/2019 10:54 AM	ECLIPSEPRODUCT File	1 KB	
 artifacts.xml	9/17/2019 2:04 AM	XML Document	277 KB	
 eclipse.exe	9/17/2019 2:05 AM	Application	416 KB	
 eclipse.ini	10/10/2019 4:51 PM	Configuration settings	1 KB	
 eclipsesec.exe	9/17/2019 2:05 AM	Application	128 KB	
 lombok.jar	10/10/2019 4:51 PM	Executable Jar File	1,723 KB	



Project Lombok v1.18.10 - Installer

Install successful

Don't forget to:

- add `lombok.jar` to your projects,
- **exit and start** your IDE,
- **rebuild** all projects!

If you start Eclipse with a custom `-vm` parameter, you'll need to add:
`-vmargs -javaagent:lombok.jar`
as parameter as well.

If you start Spring Tools Suite 4 with a custom `-vm` parameter, you'll need to add:
`-vmargs -javaagent:lombok.jar`
















- **PROMOTION:** @Wither has been promoted to the main package, renamed to @With. Otherwise, no changes have been made to the annotation. The old experimental annotation will remain for a few versions as a deprecated annotation. If you had `lombok.config` configuration for this annotation, the configuration keys for this feature have been renamed.
- **FEATURE:** You can now configure a custom logger framework using the new `@CustomLog` annotation in combination with the `lombok.log.custom.declaration` configuration key. See the log documentation for more information. Pullrequest #2086 with thanks to Adam Juraszek.
- **ENHANCEMENT:** Thanks to Mark Haynes, the `staticConstructor` will now also be generated if a (private) constructor already exists.
- **ENHANCEMENT:** `val` is now capable of decoding the type of convoluted expressions (particularly if the right hand side involves lambdas and conditional (ternary) expressions). Pull Request #2109 with thanks to Alexander Bulgakov.

<https://projectlombok.org>

v1.18.10

[View full changelog](#)

Quit Installer

Program Files > sts-4.4.0.RELEASE				
	Search sts-4.4.0.RELEASE			
<input type="checkbox"/> Name	Date modified	Type	Size	
 configuration	10/10/2019 4:32 PM	File folder		
 dropins	9/17/2019 7:41 AM	File folder		
 features	10/10/2019 4:28 PM	File folder		
 META-INF	10/8/2019 11:48 PM	File folder		
 p2	10/9/2019 12:08 AM	File folder		
 plugins	10/10/2019 4:28 PM	File folder		
 readme	10/8/2019 11:47 PM	File folder		
 .eclipseproduct	9/16/2019 10:54 AM	ECLIPSEPRODUCT File	1 KB	
 artifacts.xml	10/10/2019 4:28 PM	XML Document	219 KB	
 eclipsesec.exe	9/17/2019 7:38 AM	Application	127 KB	
 license.txt	9/17/2019 7:14 AM	Text Document	12 KB	
 lombok.jar	10/10/2019 4:51 PM	Executable Jar File	1,723 KB	
 open-source-licenses.txt	9/17/2019 7:42 AM	Text Document	941 KB	
 SpringToolSuite4.exe	9/17/2019 7:38 AM	Application	415 KB	
 SpringToolSuite4.ini	10/10/2019 4:51 PM	Configuration settings	1 KB	