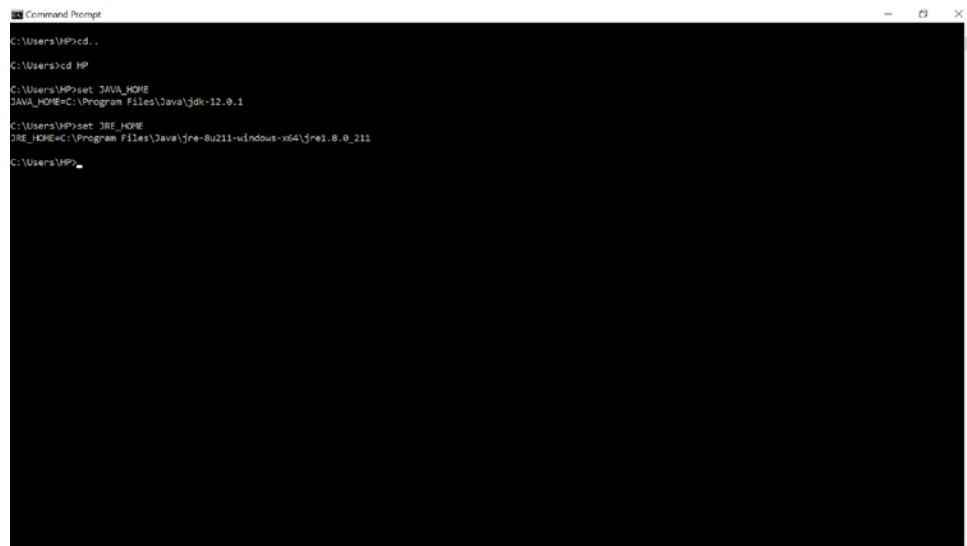


Configuring and Starting Apache Tomcat Server

Downloading Tomcat Server

1. Download the apache-tomcat 9.0.36 zip for required windows 32-bits or 64-bits zip file.(
<https://tomcat.apache.org/download-90.cgi>)
2. Unzip the file in c:// for ease of use.
Check for the following in tomcat folder:
 1. bin
 2. logs
 3. webapps
 4. work
 5. temp
 6. conf
 7. lib
3. Install the java jdk and jre packages according to the system configuration.
4. Create environment variable JAVA_HOME and provide variable path the java jdk (path).
5. Create environment variable JRE_HOME and provide variable path the java jre (path).
6. Check if the environment variable is set in command prompt:
set JAVA_HOME will return the variable path
set JRE_HOME will return the variable path if set.



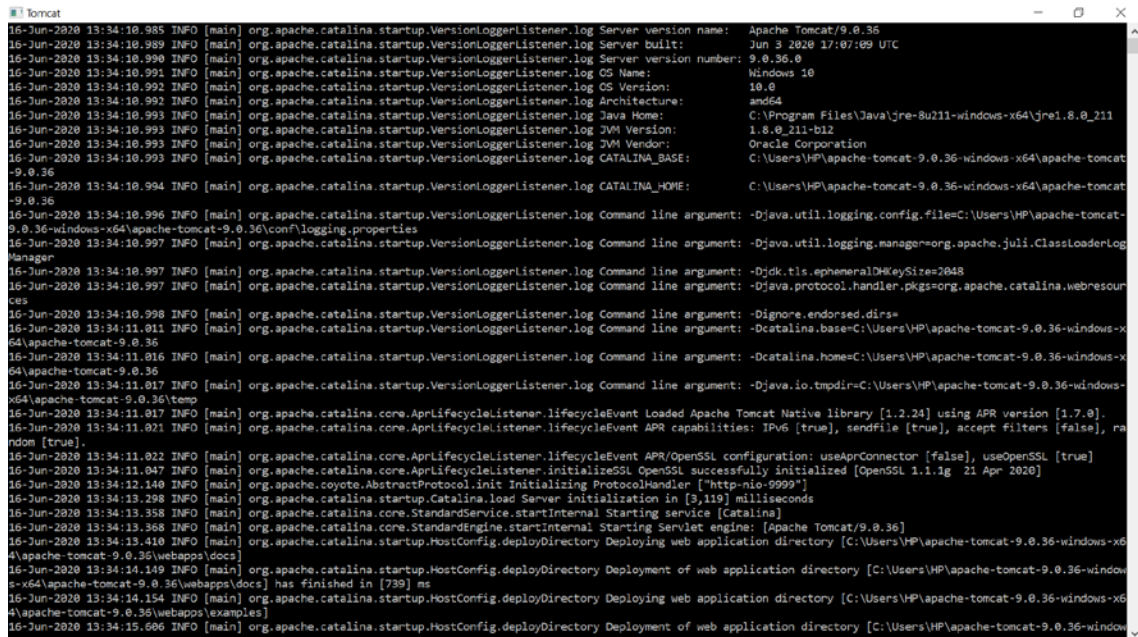
```
Command Prompt
C:\Users\HP>cd ..
C:\Users\HP>cd HP
C:\Users\HP>set JAVA_HOME
JAVA_HOME=C:\Program Files\Java\jdk-12.0.1
C:\Users\HP>set JRE_HOME
JRE_HOME=C:\Program Files\Java\jre-8u211-windows-x64\jre1.8.0_211
C:\Users\HP>
```

Configuring Apache tomcat:

1. Open the conf folder in tomcat directory.
2. "conf\web.xml"; Enabling a Directory Listing
Open the configuration file "web.xml". We shall enable the directory listing by changing "listings" from "false" to "true" for the "default" servlet.
<param-value>true</param-value> like:
3. "conf\server.xml file"; set the TCP Port Number
<Connector port="9999" protocol="HTTP/1.1" Like -> You can set the port between 1024 and 65555.
4. "conf\context.xml"; Enabling Automatic Reload
In that we set reloadable="true" to the <Context> element to enable automatic reload after code changes.
Add reloadable="true" as in the following:
<Context reloadable="true"> </Context> Like
5. (Optional) "conf\tomcat-users.xml"
It is used to manage Tomcat by adding the highlighted lines, inside the <tomcat-users> elements. In that we can add a password and username as an optional step.
6. Your Apache Tomcat Server is now configured.

Start Server

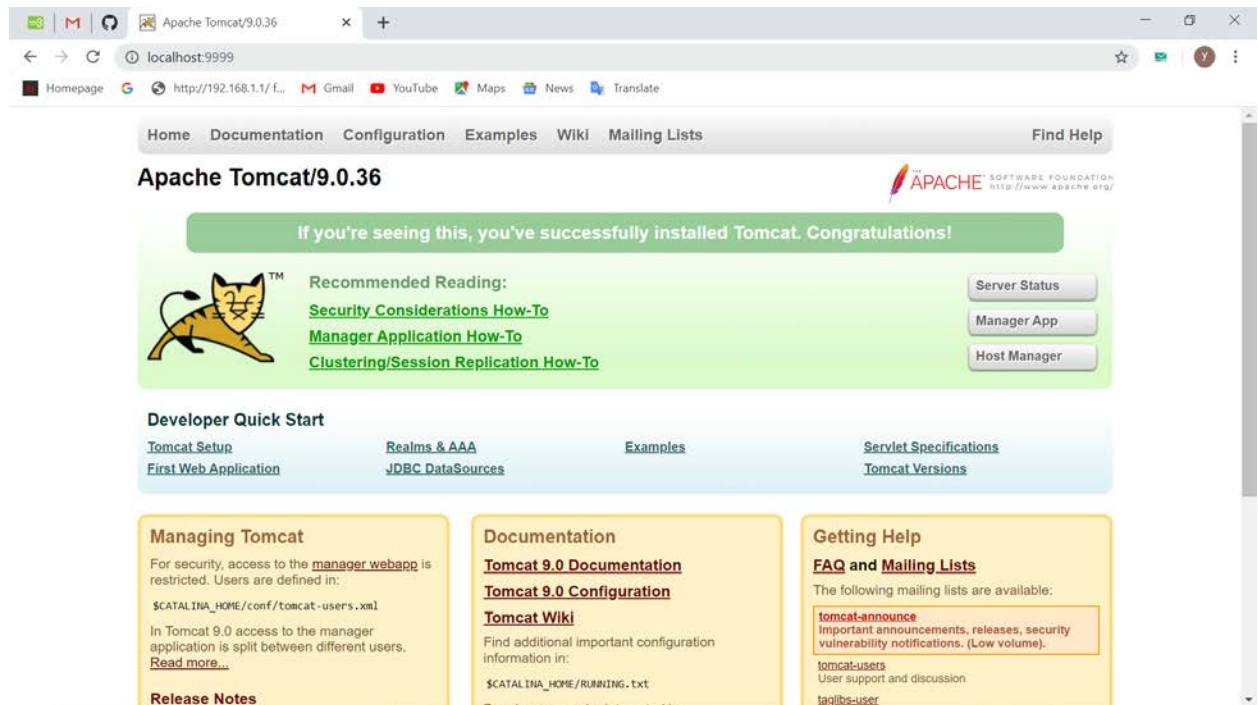
1. Launch in command prompt by changing the directory(cd) to tomcat bin folder where all executable files exist.
cd C:\Users\HP\apache-tomcat-9.0.36-windows-x64\apache-tomcat-9.0.36\bin
2. Now add command (startup.bat) opens the tomcat server in another command window.
3. Check for the port in tomcat window is set to 9999.



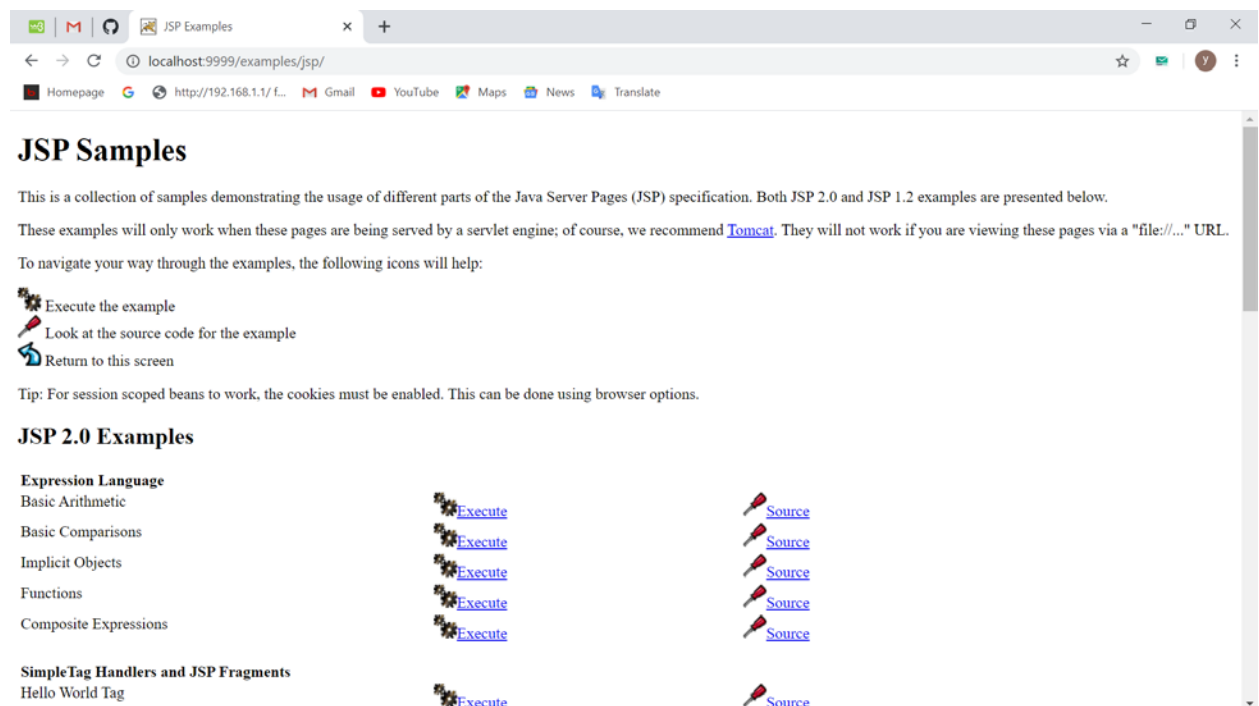
```
16-Jun-2020 13:34:10.985 INFO [main] org.apache.catalina.startup.VersionLoggerListener.log Server version name: Apache Tomcat/9.0.36
16-Jun-2020 13:34:10.989 INFO [main] org.apache.catalina.startup.VersionLoggerListener.log Server built: Jun 3 2020 17:07:09 UTC
16-Jun-2020 13:34:10.990 INFO [main] org.apache.catalina.startup.VersionLoggerListener.log Server version number: 9.0.36.0
16-Jun-2020 13:34:10.991 INFO [main] org.apache.catalina.startup.VersionLoggerListener.log OS Name: Windows 10
16-Jun-2020 13:34:10.992 INFO [main] org.apache.catalina.startup.VersionLoggerListener.log OS Version: 10.0
16-Jun-2020 13:34:10.992 INFO [main] org.apache.catalina.startup.VersionLoggerListener.log Architecture: amd64
16-Jun-2020 13:34:10.993 INFO [main] org.apache.catalina.startup.VersionLoggerListener.log Java Home: C:\Program Files\Java\jre-8u211-windows-x64\jre1.8.0_211
16-Jun-2020 13:34:10.993 INFO [main] org.apache.catalina.startup.VersionLoggerListener.log JVM Version: 1.8.0_211-b12
16-Jun-2020 13:34:10.993 INFO [main] org.apache.catalina.startup.VersionLoggerListener.log JVM Vendor: Oracle Corporation
16-Jun-2020 13:34:10.993 INFO [main] org.apache.catalina.startup.VersionLoggerListener.log CATALINA_BASE: C:\Users\HP\apache-tomcat-9.0.36-windows-x64\apache-tomcat-9.0.36
16-Jun-2020 13:34:10.994 INFO [main] org.apache.catalina.startup.VersionLoggerListener.log CATALINA_HOME: C:\Users\HP\apache-tomcat-9.0.36-windows-x64\apache-tomcat-9.0.36
16-Jun-2020 13:34:10.996 INFO [main] org.apache.catalina.startup.VersionLoggerListener.log Command line argument: -Djava.util.logging.config.file=C:\Users\HP\apache-tomcat-9.0.36-windows-x64\apache-tomcat-9.0.36\conf\logging.properties
16-Jun-2020 13:34:10.997 INFO [main] org.apache.catalina.startup.VersionLoggerListener.log Command line argument: -Djava.util.logging.manager=org.apache.juli.ClassLoaderLogManager
16-Jun-2020 13:34:10.997 INFO [main] org.apache.catalina.startup.VersionLoggerListener.log Command line argument: -Djdk.tls.ephemeralDHKeySize=2048
16-Jun-2020 13:34:10.997 INFO [main] org.apache.catalina.startup.VersionLoggerListener.log Command line argument: -Djava.protocol.handler.pkgs=org.apache.catalina.webresources
16-Jun-2020 13:34:10.998 INFO [main] org.apache.catalina.startup.VersionLoggerListener.log Command line argument: -Dignore.endorsed.dirs=
16-Jun-2020 13:34:11.011 INFO [main] org.apache.catalina.startup.VersionLoggerListener.log Command line argument: -Dcatalina.base=C:\Users\HP\apache-tomcat-9.0.36-windows-x64\apache-tomcat-9.0.36
16-Jun-2020 13:34:11.016 INFO [main] org.apache.catalina.startup.VersionLoggerListener.log Command line argument: -Dcatalina.home=C:\Users\HP\apache-tomcat-9.0.36-windows-x64\apache-tomcat-9.0.36
16-Jun-2020 13:34:11.017 INFO [main] org.apache.catalina.startup.VersionLoggerListener.log Command line argument: -Djava.io.tmpdir=C:\Users\HP\apache-tomcat-9.0.36-windows-x64\apache-tomcat-9.0.36\tmp
16-Jun-2020 13:34:11.017 INFO [main] org.apache.catalina.core.AprLifecycleListener.lifecycleEvent Loaded Apache Tomcat Native library [1.2.24] using APR version [1.7.0].
16-Jun-2020 13:34:11.021 INFO [main] org.apache.catalina.core.AprLifecycleListener.lifecycleEvent APR capabilities: IPv6 [true], sendfile [true], accept filters [false], random [true].
16-Jun-2020 13:34:11.022 INFO [main] org.apache.catalina.core.AprLifecycleListener.lifecycleEvent APR/OpenSSL configuration: useAprConnector [false], useOpenSSL [true]
16-Jun-2020 13:34:11.047 INFO [main] org.apache.catalina.core.AprLifecycleListener.initializeSSL OpenSSL successfully initialized [OpenSSL 1.1.1g 21 Apr 2020]
16-Jun-2020 13:34:11.140 INFO [main] org.apache.coyote.AbstractProtocol.init Initializing ProtocolHandler ["http-nio-9999"]
16-Jun-2020 13:34:11.208 INFO [main] org.apache.catalina.startup.Catalina.load Server Initialization in [3,110] milliseconds
16-Jun-2020 13:34:13.358 INFO [main] org.apache.catalina.core.StandardService.startInternal Starting service [Catalina]
16-Jun-2020 13:34:13.368 INFO [main] org.apache.catalina.core.StandardEngine.startInternal Starting Servlet engine: [Apache Tomcat/9.0.36]
16-Jun-2020 13:34:13.410 INFO [main] org.apache.catalina.startup.HostConfig.deployDirectory Deploying web application directory [C:\Users\HP\apache-tomcat-9.0.36-windows-x64\apache-tomcat-9.0.36\webapps\docs]
16-Jun-2020 13:34:14.149 INFO [main] org.apache.catalina.startup.HostConfig.deployDirectory Deployment of web application directory [C:\Users\HP\apache-tomcat-9.0.36-windows-x64\apache-tomcat-9.0.36\webapps\docs] has finished in [739] ms
16-Jun-2020 13:34:14.154 INFO [main] org.apache.catalina.startup.HostConfig.deployDirectory Deploying web application directory [C:\Users\HP\apache-tomcat-9.0.36-windows-x64\apache-tomcat-9.0.36\webapps\examples]
16-Jun-2020 13:34:15.606 INFO [main] org.apache.catalina.startup.HostConfig.deployDirectory Deployment of web application directory [C:\Users\HP\apache-tomcat-9.0.36-windows-x64\apache-tomcat-9.0.36\webapps\examples] has finished in [1,456] ms
```

Access the Server:

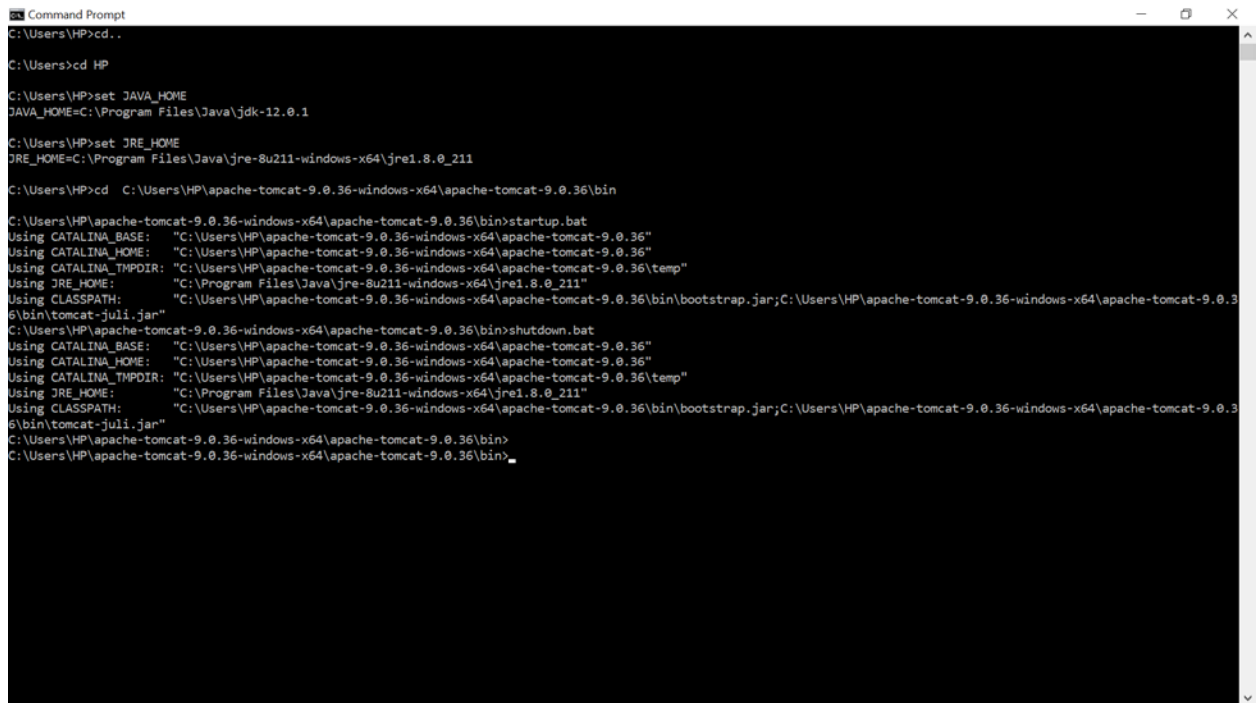
1. Open a browser then enter the URL "http://localhost:9999" to access the Tomcat server's welcome page.



2. Now try the URL http://localhost:9999/examples to view JSP and servlet examples.



3. To shutdown the server use shutdown.bat in command prompt or simply apply ctrl+c in tomcat window.



```
Command Prompt
C:\Users\HP>cd..
C:\Users>cd HP
C:\Users\HP>set JAVA_HOME
JAVA_HOME=C:\Program Files\Java\jdk-12.0.1
C:\Users\HP>set JRE_HOME
JRE_HOME=C:\Program Files\Java\jre-8u211-windows-x64\jre1.8.0_211
C:\Users\HP>cd C:\Users\HP\apache-tomcat-9.0.36-windows-x64\apache-tomcat-9.0.36\bin
C:\Users\HP\apache-tomcat-9.0.36-windows-x64\apache-tomcat-9.0.36\bin>startup.bat
Using CATALINA_BASE:   "C:\Users\HP\apache-tomcat-9.0.36-windows-x64\apache-tomcat-9.0.36"
Using CATALINA_HOME:   "C:\Users\HP\apache-tomcat-9.0.36-windows-x64\apache-tomcat-9.0.36"
Using CATALINA_TMPDIR: "C:\Users\HP\apache-tomcat-9.0.36-windows-x64\apache-tomcat-9.0.36\temp"
Using JRE_HOME:        "C:\Program Files\Java\jre-8u211-windows-x64\jre1.8.0_211"
Using CLASSPATH:       "C:\Users\HP\apache-tomcat-9.0.36-windows-x64\apache-tomcat-9.0.36\bin\bootstrap.jar;C:\Users\HP\apache-tomcat-9.0.36\bin\tomcat-juli.jar"
C:\Users\HP\apache-tomcat-9.0.36-windows-x64\apache-tomcat-9.0.36\bin>shutdown.bat
Using CATALINA_BASE:   "C:\Users\HP\apache-tomcat-9.0.36-windows-x64\apache-tomcat-9.0.36"
Using CATALINA_HOME:   "C:\Users\HP\apache-tomcat-9.0.36-windows-x64\apache-tomcat-9.0.36"
Using CATALINA_TMPDIR: "C:\Users\HP\apache-tomcat-9.0.36-windows-x64\apache-tomcat-9.0.36\temp"
Using JRE_HOME:        "C:\Program Files\Java\jre-8u211-windows-x64\jre1.8.0_211"
Using CLASSPATH:       "C:\Users\HP\apache-tomcat-9.0.36-windows-x64\apache-tomcat-9.0.36\bin\bootstrap.jar;C:\Users\HP\apache-tomcat-9.0.36\bin\tomcat-juli.jar"
C:\Users\HP\apache-tomcat-9.0.36-windows-x64\apache-tomcat-9.0.36\bin>
C:\Users\HP\apache-tomcat-9.0.36-windows-x64\apache-tomcat-9.0.36\bin>
```