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Installing products

In the subsequent chapters, we will see how to develop JEE applications using different APIs in Eclipse. But the applications are going to need a JEE application server and a database. We are going to use Tomcat web container for the initial few chapters and then use GlassFish JEE application server. We are going to use MySQL database. We are going to need these products for most of the applications that we are going to develop. So the following sections describe how to install and configure Eclipse, Tomcat, GlassFish, and MySQL.

Installing Eclipse (Version 4.4)

You can download Eclipse from https://eclipse.org/downloads/ (https://eclipse.org/downloads/). You will see many different packages for Eclipse. Make sure you install the **Eclipse IDE for Java EE Developers** package. Select an appropriate package based on your OS and JVM architecture (32 or 64 bit). You may want to run the command java –version to know if the JVM is 32-bit or 64-bit.

Unzip the downloaded zip file and then run the Eclipse application (you need to install JDK before you run Eclipse). The first time you run Eclipse, you will be asked to specify a workspace. Create a new folder in your file system and select that as the initial workspace folder. If you intend to use the same folder for workspace on every launch of Eclipse, then check the **Use this as the default and do not ask again** check box.
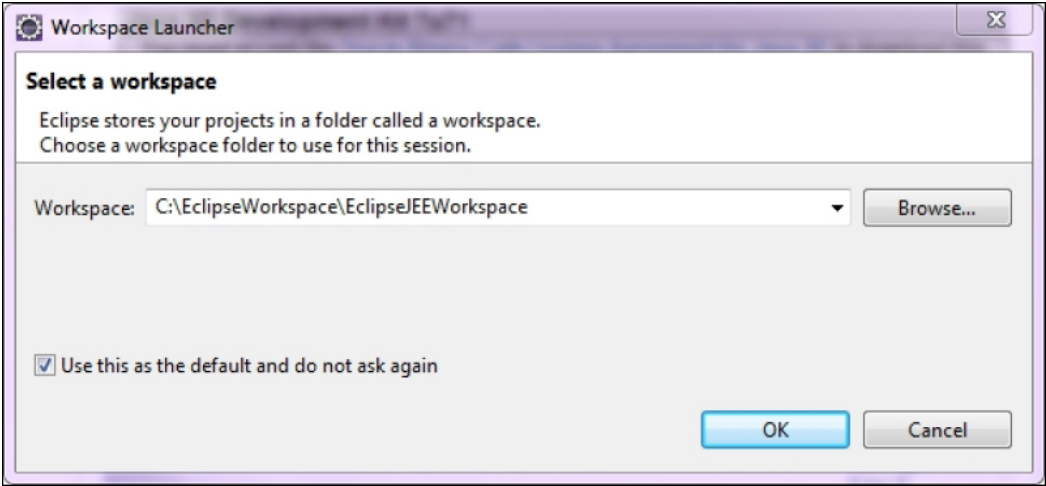

Figure 1.5 Select Eclipse Workspace

You will then see default Java EE perspective of Eclipse as shown in Figure 1.2.

Installing Tomcat

Tomcat is a Web Container. It supports APIs in the presentation layer described earlier. In addition, it supports JDBC and JPA also. It is easy to use and configure, and could be a good option if you do not want to use EJBs.

Download Tomcat from http://tomcat.apache.org/ (http://tomcat.apache.org/). At the time of writing, the latest version of Tomcat available was 8. Download the zip file and unzip in a folder. Set the `JAVA_HOME` environment variable to point to the folder where JDK is installed (the folder path should be the JDK folder, which has `bin` as one of the sub folders). Then run `startup.bat` at the Command Prompt on Windows and `startup.sh` in a Terminal window on Mac and Linux, to start the Tomcat server. If there are no errors, then you should see the message `Server startup in --ms` or `Tomcat started`.

Default Tomcat installation is configured to use port `8080`. If you want to change the port, open `server.xml` under the `conf` folder and look for connector declaration like:

Copy
```
<Connector port="8080" protocol="HTTP/1.1"
           connectionTimeout="20000"
           redirectPort="8443" />
```

Change the port value to any port number you want, though in this book we will be using the default `port 8080`. Before we open the default page of Tomcat, we will add a user for administration of the Tomcat server. Open `tomcat-users.xml` under the `conf` folder in any text editor. At the end of the file you will see commented example of how to add users. Add the following configuration before closure of the `</tomcat-users>` tag:

Copy
```
<role rolename="manager-gui"/>
<user username="admin" password="admin" roles="manager-gui"/>
```

Here we are adding a user `admin`, with password also as `admin,` to a role called `'manager-gui'`. This role has access to web pages for managing an application in Tomcat. This and other security roles are defined in `web.xml` of the `manager` application. You can find it at `webapps/manager/WEB-INF/web.xml`. For more information for managing Tomcat server, see http://tomcat.apache.org/tomcat-8.0-doc/manager-howto.html (http://tomcat.apache.org/tomcat-8.0-doc/manager-howto.html).

After making the preceding changes, open a web browser and browse to `http://localhost:8080` (modify port number if you have changed the default port as described previously). You will see the following default Tomcat page:
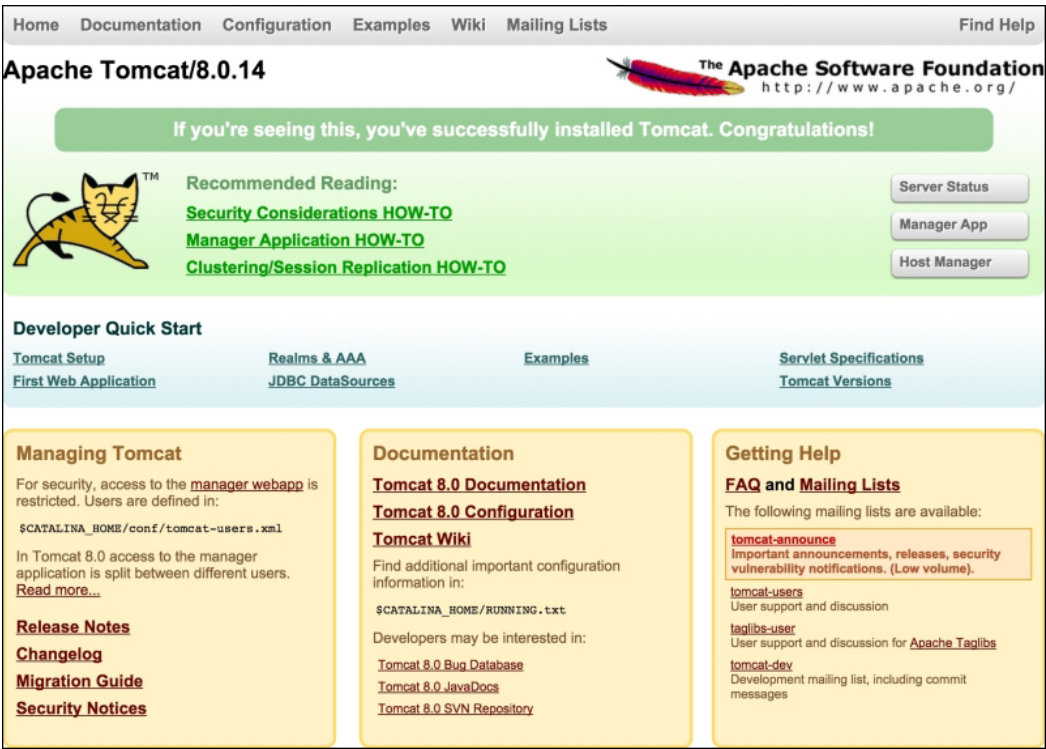
Figure 1.6 The default Tomcat web application

Click on the **Manager App** button on the right. You will be asked for the user name and password. Enter the user name and password you configured in `tomcat-users.xml` for `manager-gui`, as described earlier. After you are successfully logged in, you will see the **Tomcat Web Application Manager** page, as shown in the following image. You can see the applications deployed in Tomcat in this page. You can also deploy your applications from this page.
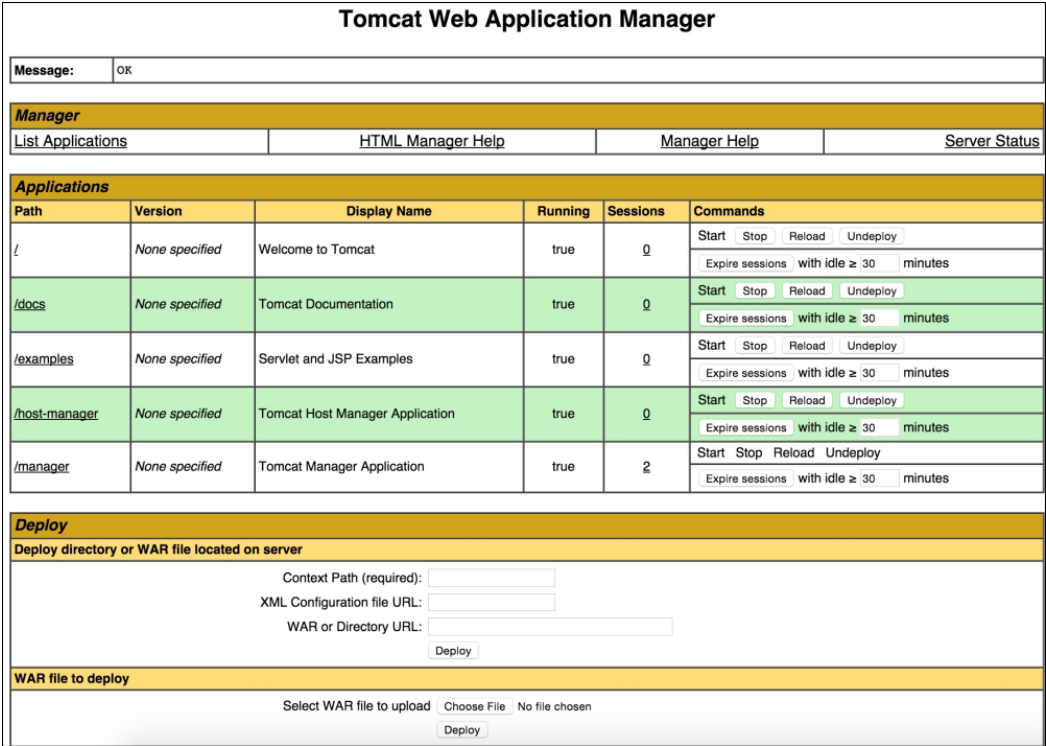

Figure 1.7 Tomcat Web Application Manager

To stop the Tomcat server, press **Ctrl**/COMMAND + **C** or run shutdown script in the bin folder.

Installing the GlassFish server

Download GlassFish from https://glassfish.java.net/download.html (https://glassfish.java.net/download.html). GlassFish comes in two flavors: Web Profile and Full Platform. Web Profile is like Tomcat, which does not include EJB support. So download Full Platform. See https://glassfish.java.net/webprofileORfullplatform31x.html (https://glassfish.java.net/webprofileORfullplatform31x.html) for comparison of Web Profile and Full Platform.

Unzip the downloaded file in a folder. Default port of GlassFish server is also `8080`. If you want to change that, open `glassfish/domains/domain1/config/domain.xml` in a text editor (you could open it in Eclipse too, using the **File | Open File** menu option) and look for `8080`. You should see it in one of the `<network-listener>`. Change the port if you want to (which may be the case if some other application is already using that port).

To start the server, run the `startserv` script (`.bat` or `.sh` depending on the OS you use). Once the server has started, open a web browser and browse to `http://localhost:8080`. You should see a page like the following screenshot:
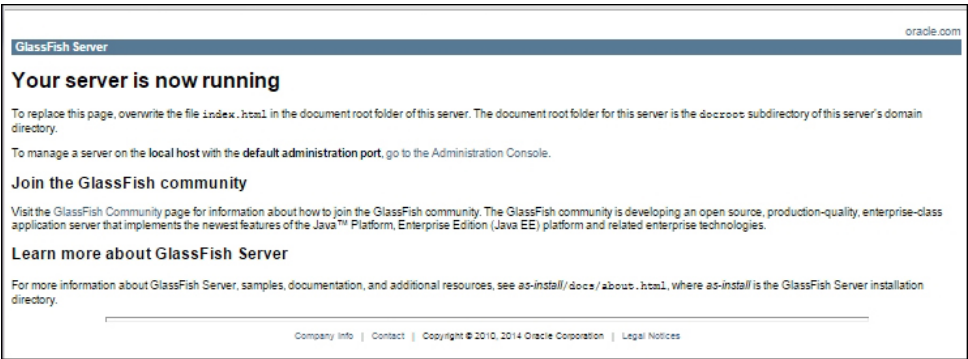

Figure 1.8 The default GlassFish web application

This page is located at `glassfish/domains/domain1/docroot/index.html`. Click on the **go to the Administration Console** link in the preceding page to open GlassFish administrator. For details on administrating GlassFish server, see https://glassfish.java.net/docs/4.0/administration-guide.pdf (https://glassfish.java.net/docs/4.0/administration-guide.pdf).