

Dude! Where's my Eclipse!?

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1 Dude! Where's my Eclipse

1.1 Pre-requisites

You will need a linux server with the following installed:

tomcat This demo was prepare with tomcat-8.

tomcat manager Used for deploying your built application

A web browser For accessing the tomcat manager

git To access the project

a text editor To fix any bugs you find (**Don't** use **eclipse**, or any other "IDE", because that's the whole point.)

java 8 JDK To build code

If you develop on one machine and deploy to the other, then **tomcat** and **tomcat manager** are to be on the system you're deploying to, and the rest where you're developing.

If your development environment is not on the same server as the **tomcat** instance, you'll need a copy of the file **tomcat8-servlet-api.jar** on the same system as your java code.

1.2 Setting up

0. All commands assume a Linux environment. `${HOME}` refers to the home directory of the user, and `${DEV_HOME}` refers to where the git repository has been cloned to.
1. Get the code

```
git clone https://gitlab.com/eibhear/javaBootcampNoEclipse.git
```

The repository is now in `${DEV_HOME}`. Set that as an environment variable and change into it:

```
export DEV_HOME=$(pwd)/javaBootcampNoEclipse
cd ${DEV_HOME}
```

2. Make sure you're at the starting point:

```
git checkout lesson-1
```

1.3 Lesson 1 – compile the code.

1.3.1 Starting point

A clean git working area

1.3.2 Goal

Java files compiled into class files

1.3.3 Steps

0. Confirm you can access the java compiler:

```
javac -version
```

If this doesn't result in a message that looks something like `javac 1.8.0_141`, you'll need to find where `javac` is installed and place it on your `PATH`.

1. Change to where the code is:

```
cd ${DEV_HOME}/source/java/org/gibiris/javaBootcampNoEclipse
```

2. Compile the files:

```
javac *.java
```

3. Check the errors. If you see the message

```
error: package javax.servlet does not exist
```

then look at your `CLASSPATH` setting, as dependent libraries are missing.

4. Fix your `CLASSPATH` and compile the java files:

```
export CLASSPATH=/usr/share/java/tomcat8-servlet-api.jar:${CLASSPATH}
javac *.java
```

5. If successful, you will have the following additional files under `${DEV_HOME}/source/java/`:

```
org/gibiris/javaBootcampNoEclipse/MyHelloWorldBean.class
org/gibiris/javaBootcampNoEclipse/MyHelloWorldServlet.class
```

If this is the case, move on to lesson 2:

```
git checkout lesson-2
```

1.4 Lesson 2 – build the jar file

1.4.1 Starting point

A clean git working area with two additional class files in `${DEV_HOME}/source/java/`:

```
org/gibiris/javaBootcampNoEclipse/MyHelloWorldBean.class
org/gibiris/javaBootcampNoEclipse/MyHelloWorldServlet.class
```

1.4.2 Goal

Class files archived into a jar file

1.4.3 Steps

1. Decide whether you want to include the source (`*.java`) files in the jar file.
2. Determine other files to be included in the jar file (e.g. config files, property files, etc.).
3. Change to the top-level of the package in the source:

```
cd ${DEV_HOME}/source/java
```

Create the `lib/` directory to take the jar file:

```
mkdir -pv ../lib
```

4. If you're **not** including the source files in the jar:

```
jar cvf ../lib/javaBootcampNoEclipse.jar \
    org/gibiris/javaBootcampNoEclipse/*.class
```

5. If you **are** including the source files in the jar:

```
jar cvf ../lib/javaBootcampNoEclipse.jar org
```

6. If successful, you will now have a new file:

```
${DEV_HOME}/source/lib/javaBootcampNoEclipse.jar
```

If this is the case, move on to lesson 3:

```
git checkout lesson-3
```

1.5 Lesson 3 – build the war file

1.5.1 Starting point

A clean git working area with two additional class files in `${DEV_HOME}/source/java/`:

```
org/gibiris/javaBootcampNoEclipse/MyHelloWorldBean.class
org/gibiris/javaBootcampNoEclipse/MyHelloWorldServlet.class
```

and one additional jar file in `${DEV_HOME}/source/lib/`:

```
javaBootcampNoEclipse.jar
```

1.5.2 Goal

A deployable war file

1.5.3 Steps

0. Review the following:

- <http://tomcat.apache.org/tomcat-8.0-doc/appdev/deployment.html> to understand the structure of the file `web.xml` and the `war` file
- `${DEV_HOME}/source/res/web.xml` to understand how this application is to be used

1. Create an empty directory in `${DEV_HOME}` called `webapp`, then its directory structure, and then change into it:

```
mkdir -vp ${DEV_HOME}/webapp
mkdir -vp ${DEV_HOME}/webapp/WEB-INF/lib
cd ${DEV_HOME}/webapp
```

2. Copy in the jsps:

```
cp -rv ${DEV_HOME}/source/jsps/* ${DEV_HOME}/webapp
```

3. Copy in the jar file:

```
cp -rv ${DEV_HOME}/source/lib/javaBootcampNoEclipse.jar \
    ${DEV_HOME}/webapp/WEB-INF/lib
```

4. Copy in the `web.xml` file:

```
cp -rv ${DEV_HOME}/source/res/web.xml \  
    ${DEV_HOME}/webapp/WEB-INF
```

5. Create the war file:

```
jar cvf ${DEV_HOME}/source/lib/javaBootcampNoEclipse.war *
```

6. If this was successful you will now have a new file:

```
${DEV_HOME}/source/lib/javaBootcampNoEclipse.war
```

7. If this is the case, remove the directory `${DEV_HOME}/webapp` and move on to lesson 4:

```
cd ${DEV_HOME}; rm -fr ${DEV_HOME}/webapp  
git checkout lesson-4
```

1.6 Lesson 4 – deploy and test

1.6.1 Starting point

1. A clean working area with two additional class files in `${DEV_HOME}/source/java/`:

```
org/gibiris/javaBootcampNoEclipse/MyHelloWorldBean.class  
org/gibiris/javaBootcampNoEclipse/MyHelloWorldServlet.class
```

one additional jar file and one additional war file, both in `${DEV_HOME}/source/lib`:

```
javaBootcampNoEclipse.jar  
javaBootcampNoEclipse.war
```

1.6.2 Goal

A working application

1.6.3 Steps

0. Some pre-steps
 - If this isn't the first time to deploy, be sure to *undeploy* the previous version of the application.

- To follow these steps, you'll need your file `javaBootcampNoEclipse.war` to be accessible locally to your browser.

1. Navigate to `http://server:8080/manager` (where `server` is where your tomcat instance is running)
2. Go to the *WAR file to deploy* section and use the *Browse...* button to select the war file to deploy (`javaBootcampNoEclipse.war`).
3. Press the *Deploy* button. If successful, you'll see your application shown in the list.
4. Go to `http://server:8080/javaBootcampNoEclipse` to access your app.
5. Test the application. If all is well, clean up your development environment altogether:

```
rm -vf ${DEV_HOME}/source/java/org/gibiris/javaBootcampNoEclipse/*.class
rm -vf ${DEV_HOME}/source/lib/javaBootcampNoEclipse.*ar
rm -vfr ${DEV_HOME}/webapp
```

6. Move on to lesson 5:

```
git checkout lesson-5
```

1.7 Lesson 5 – Add new functionality

1.7.1 Starting point

A clean working area, brought up to date to include the two new files – `Astro/AstroFun.java` in `${DEV_HOME}/source/java/org/gibiris/javaBootcampNoEclipse` and `AstroLib-1.1.5ws.jar` in `${DEV_HOME}/source/lib` – and an update to `MyHelloWorldServlet.java` in `${DEV_HOME}/source/java/org/gibiris/javaBootcampNoEclipse`.

1.7.2 Goal

A working, updated application deployed to tomcat.

1.7.3 Steps

0. Pre-steps

- Make sure your environment is set up as per the previous lessons:
 - DEV_HOME is set to where the git repository is cloned to
 - CLASSPATH contains tomcat8-servlet-api.jar
- Clean out the working area if there are unnecessary/unwanted files:

```
cd ${DEV_HOME}/source/java/org/gibiris/javaBootcampNoEclipse; \  
    rm -vf *.class; rm -vf Astro/*.class  
rm -vf ${DEV_HOME}/source/lib/javaBootcampNoEclipse.*ar  
rm -vfr ${DEV_HOME}/webapp
```

- Review the changes that have been applied to the working area

1. Compile the java files (including the new java file) as per *Lesson 1*.

```
cd ${DEV_HOME}/source/java/org/gibiris/javaBootcampNoEclipse  
javac *.java
```

Does it compile? If not, why not? Three hints:

- There was a new sub-package added, `org.gibiris.javaBootcampNoEclipse.Astro`, which your java compiler needs to be able to find
- There was a new jar file introduced to the repository
- There's a bug in the package specification in the new java file. Looking closely at the branches of this git repository, you might even find a fix for it.

2. Build the jar file as per *Lesson 2* (except, this time, the `lib` directory exists already):

```
cd ${DEV_HOME}/source/java  
jar cvf ../lib/javaBootcampNoEclipse.jar org
```

3. Build the war file as per *Lesson 3*.


```
mkdir -vp ${DEV_HOME}/webapp
mkdir -vp ${DEV_HOME}/webapp/WEB-INF/lib
cd ${DEV_HOME}/webapp
cp -rv ${DEV_HOME}/source/jsps/* ${DEV_HOME}/webapp
cp -rv ${DEV_HOME}/source/lib/javaBootcampNoEclipse.jar \
    ${DEV_HOME}/webapp/WEB-INF/lib
cp -rv ${DEV_HOME}/source/res/web.xml \
    ${DEV_HOME}/webapp/WEB-INF
jar cvf ${DEV_HOME}/source/lib/javaBootcampNoEclipse.war *
cd ${DEV_HOME}; rm -fr ${DEV_HOME}/webapp
```

4. Deploy the updated application as per *Lesson 4*. You will need to undeploy the previous version first.
Does it deploy? Why not? If it deploys, does it work? Why not? (Hint: there was a new jar file introduced to the repository)
5. Fix the new bug, undeploy the bad application and deploy the corrected one.

1.8 Fin

Look closely. At last, you get to see an eclipse!

Hint: what's happening¹ in Grand Island in Nebraska at ~13:00 local time on [2017-08-21 Mon]?

¹... or "what *happened*" if it has gone past