Tutorial: setting up a web application

1. Introduction

In order to develop a web application is mandatory to download an IDE (Integrated Developer Environment).

The two most used ones (among many others) are NETBEANS and ECLIPSE.

For the goals of this course the suggested IDE will be NETBEANS and the development of the “test” application will be done using it. Still the same conceptual steps are applicable to ECLIPSE.

NOTE: for each error that you can find in this tutorial please signal it by sending an e-mail to angelini@dis.uniroma1.it
2. Netbeans

a. Install IDE and application server

Go to the following url:

- https://netbeans.org/

And click on the “download” button.

In the next screen first select the operating system for which you want to download the IDE (from the top-right drop-down menu; you can choose among Windows, OSX, Linux or OS independent versions)

Then select the last option (“All”) that comes in a bundle already comprehensive of 2 different application servers (GlassFish from Oracle and Tomcat from Apache)
After the download is finished, launch the installer (command specific to your OS) and follow the instructions on screen.

First screen will provide default options for install process.
Click on “customize” and select in addition to the already selected Glassfish web server, the web server “Tomcat”. Leave the other options as they are (selected by default). Then click “Next”.

![NetBeans IDE installer interface with customized selections]

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![NetBeans IDE installer interface with customized selections]
Proceed to specify the paths for both GlassFish, Tomcat and Netbeans IDE as shown in following pictures. In between accept the various licenses agreements requests; each time click “Next” to continue:

**Glassfish:**
Apache Tomcat 8.0.3 Installation
Choose destination folder.
Install Apache Tomcat to:
C:\Program Files\Apache Software Foundation\Apache Tomcat 8.0.3

NetBeans IDE 6.0 Installation
Choose the installation folder and JDK™.
Install the NetBeans IDE to:
C:\Program Files\NetBeans 6.0
JDK™ for the NetBeans IDE:
C:\Program Files\Java\jdk1.7.0_51

< Back  Next >  Cancel
Confirm the whole installing options specified and click on “Install”. This will start the installation process.

When everything is done click on “Finish”
b. Create a simple web-application

After installation phase is complete launch Netbeans; a start screen like the following one will be presented to you:

Proceed and select “New Project”: 
and then from the following menu select “Java-Web → Web-Application”:

In the newly opened dialog give a name to the web application (call it “myFirstWebApplication”) and click “Next”.

Then select the runtime target (the web server on which your application will run) for your web app: choose from the drop-down menu “Apache Tomcat”. Leave the rest as it is and click “Finish”
The Skeleton for your project will be created and you will be presented with the following structure:

Expand “Web pages” node, and traverse the tree until you will find the “index.html” file. This will be the entry point of your web-app (homepage).

Change the content in the tags `<title>` and `<body>` as seen in the picture (or as you like, but just text for now, the content of the page is not important for this tutorial) and then right-click on the name of the project and choose the “Deploy” option.
The Server will be automatically started (if the server doesn't automatically start, choose from the “View” pane “Servers”, then “Tomcat”, then right-click on it and choose “start”. After that repeat the “deploy” phase) and your web application will be deployed on the server (each time you will make change to your code you must re-deploy it to the server, like a normal building phase for Desktop applications).

From the “Servers” Pane (and NOT from the editing pane), select your web-application (in the sub tree from the expansion of Tomcat Server), right click on it and choose “Open in Browser”
The Internal Browser (or the predefined from your system one, but you can change it on Preferences) will open and will be redirected to the URL of your now deployed web-application (in this case http://localhost:8084/MyFirstWebApplication)

Congratulations, you come to the end of this Tutorial!!.

3. Eclipse

As explained in the introduction, another IDE suitable for web development is ECLIPSE; It is a more general IDE with respect to NETBEANS, but the trade-off is that ECLIPSE is less user friendly and most of the steps to fulfil in order to setup a web development environment has to be done by hand, without the shortcut provided by NETBEANS.

Finally, the author stress again that in the course the NETBEANS platform is the one that will be used for web application development. Nonetheless, knowledge about different platform is encouraged in order to provide various alternative to the developer.

a. Install IDE

Go to the following url:

- http://www.eclipse.org/

and select the “download” tab
Select “ECLIPSE IDE for Java EE Developers” and be sure to download the right version with respect to your operating system.

After the download is finished extract the resulting archive wherever you want: ECLIPSE DOESN'T need a formal install process, but only a initialization phase. (NOTE: usually the content of the archive is already encapsulated in a folder called “eclipse”, so just extract it in the root of your file system or inside a folder that is not specific for the IDE)

So, after you have extracted the archive in the chosen folder launch the IDE by double-clicking on the “eclipse” file (.exe or whatever based on OS)

Immediately after this step will be requested to provide the directory for the workspace (where your projects will be stored)
Select the one you prefer (but remember it!) and click “OK”

After that Eclipse will be installed and you will see a screen like the following:

b. Install application server

After installing ECLIPSE, we must install a web server. We will use Apache tomcat. Go to the url:

http://tomcat.apache.org/

and in the download section (on left part of the screen) click on “Tomcat 7.0”
in the following screen download the archive relative to your OS, for the 7.53 version, under the “Core” category (NOTE: you can install Tomcat as a service, but in most of the cases is useful to just download the binary and have it independent from the OS)

Also in this case, just extract the archive in the preferred directory (the content is already encapsulated in a directory) and remember it for later!

Next we will link the web server to ECLIPSE. In order to do that open the “servers” view in ECLIPSE (Window->Show View->Servers)
and click on the link for creating a new server

In the new opened dialog-box select the “Apache Tomcat 7” and click “next”
then specify the directory in which you have extracted your server

then click Finish. The selected server is now linked and visible in ECLIPSE.

c. Create a simple web-application
After having installed both the IDE and the web-server, and having linked the latter with the former, what remain to do is creating a new web application project and provide it, as a runtime environment, our web-server.

First create a new project from New→Other

In the following dialog select “Web→Dynamic Web Project”, then click “next”
Fill the name for your application (choose whichever you like or the name in the picture) and, more important, select in “Runtime Target” the previously installed web server

then click “Finish”

NOTE: with this step we linked our new web app to the chosen server. In the case something didn’t go well you can always add/remove an app from a server by right-clicking on the server and choose “add and remove”
then adding the chosen web apps to the server and clicking “Finish”

Let’s continue to the final phase. We have the skeleton for the web application (just barebones and less rich than the one provided by NETBEANS) but no resources in it. In order to create them, right-click on the project name and create a new HTML file; call it as you want (or index.html to remain consistent with the NETBEANS part):
then change the content of the file accordingly to what shown in next figure (or content of your choice, the content is not important in this tutorial)

Save the file and then start the server ("green play icon" on the server tab or right click on the server name and click “start”)

Change the default browser from the proprietary (and ugly) one of ECLIPSE to one of your choice by going in Window->Web Browser

then launch and deploy the project by clicking on the project name, then Run as → run on server

Select the server on which the app has to run (Apache tomcat 7) and tick the option to not ask it again (you can change it later if you like)
If everything has gone well the browser will open and you will see the result!

Congratulations! You have come to the end of this tutorial!!