

# Homework 0: Getting Started!

This homework will serve as a warm-up for web app development. In it, you will practice several skills:

- Setting up Eclipse for Java EE development
- Accessing a Subversion repository
- Running a Java EE web app

The homework will introduce you to several tools that you will be using throughout the semester: Eclipse, Tomcat, and Subversion (SVN). These are professional-quality tools commonly used in practice.

## Step 0. Test out your username/password

You should have been issued a username and password. You will need it to complete this homework.

To test your username/password, go to the following website and log in:

<https://svn.cs.memphis.edu/svn/comp7012-2014spring/examples/>

You should see a list of files/folders.

## Step ½. Get Java (if you don't already have it)

You must have Java JRE version 7 (aka 1.7) or later installed on your system. If you don't already have it, get it here:

<http://www.java.com/>

Simply run the executable to install.

## Step 1. Get Eclipse IDE for Java EE Developers

First, create a folder somewhere in your user directory (e.g., on your Desktop) called **jee-dev**. (Actually, you can name it whatever you want.)

*IMPORTANT! It's important that you pick a good spot for this folder. Moving it later will break things.*

Download the latest version (*Kepler*) of *Eclipse for Java EE Developers* and save it to your **jee-dev** folder. Eclipse is the most widely used Integrated Development Environment (IDE) for Java. It includes facilities for editing, running, and debugging Java EE web apps. Get it here:


<http://www.eclipse.org/downloads/>

*IMPORTANT! You need the version called Eclipse IDE for Java EE Developers.*

Once you've downloaded Eclipse, unpack the zip/tar.gz into your **jee-dev** folder. Thus, you should have an **eclipse** folder inside your **jee-dev** folder. The **eclipse** folder contains the Eclipse executable among other things.

Next, create a folder **workspace** inside your **jee-dev** folder. Eclipse will use this folder to store your project files.

Now, it's time to fire Eclipse up. To do so, run the executable **eclipse** within the **eclipse** folder (i.e., with the same name). When Eclipse prompts you to select a workspace, choose the **workspace** folder you created earlier.

Once Eclipse has launched, click the **Workbench** button (that looks like this: ) to open the **Java EE** perspective.

Now set Eclipse aside for a bit, while we move on to the next step...

## Step 2. Get Tomcat 7

Download and unpack Apache Tomcat version 7 on your machine. Tomcat is a widely used Java EE Web Container. You will use Tomcat as a server for your Java EE web apps. Get it here:

<http://tomcat.apache.org/download-70.cgi>

Choose one of the Core Binary Distributions.

*IMPORTANT! Windows users, don't choose the service-installer version. This version will interfere with your ability to start/stop Tomcat from within Eclipse.*

Download Tomcat and unpack the zip/tar.gz into your **jee-dev** folder. Thus, your jee-dev folder should now contain three folders: **eclipse**, **workspace**, and **apache-tomcat-7.0.XX**.

You should take a look at the **RUNNING.txt** file within the **apache-tomcat-7.0.XX** folder. Depending on your platform, you may need to set certain environment variables.

## Step 3. Create a Tomcat server in Eclipse

To run a web app in Eclipse, you must configure Eclipse so that it knows where a web server is located on your system.

Starting from Java EE perspective, do the following to add a Tomcat server to Eclipse.


1. Click **File > New > Other...** This should open a wizard-selection window.
2. Expand **Server** folder, select the **Server** wizard, and click **Next**. This should start the **Server** wizard.
3. Expand the **Apache** folder, select **Tomcat v7.0 Server**, and click **Next**. This should take you to a dialog box that asks for configuration information about the server.

4. To fill in the **Tomcat installation directory** field, click **Browse**. Find the **apache-tomcat-...** folder, select it, and click **Open**. Then click **Next** to advance the wizard. This should bring up the last dialog box of the wizard.
5. Click **Finish**. In the **Project Explorer**, you should see a **Servers** folder. Expand the folder, and you should see your Tomcat server.

## Step 4. Install the Eclipse Subversion plugin

To download the example web app, you will need a Subversion plugin for Eclipse. Subversion is a tool that enables you to store your project files in a central repository and to keep track of the different revisions of your files. Later, you will use Subversion to turn in homework/project assignments and to collaborate on code with your team.


Follow these steps to install Eclipse's Subversive SVN Team Provider plugin:

1. Click **Help > Install New Software...** This should pop up an **Install** window.
2. In the **Install** window's **Work with:** dropdown, select **--All Available Sites--**.
3. In the filter field (which initially contains the words "type filter text"), enter *Subversive*. This should cause the **Name/Version** columns to update. Note: Eclipse may be *very slow* in updating the table. Be patient and wait for it!
4. Check the box next to **Subversive SVN Team Provider**, and click the **Next** button. Click through the installation wizard by clicking **Next/Finish/etc.**, and restart Eclipse when prompted.
5. When Eclipse starts, click the **Workbench** button (  ) if necessary to get back to the **Java EE** perspective.
6. Click **Window > Open Perspective > Other...** This should pop up a list of perspectives.
7. Select **SVN Repository Exploring** from the list to open the perspective. Doing this should pop up an **Install Connectors** window. If you can't get the Install Connectors window to appear, see the Appendix below on alternative ways to download/install the Connectors.
8. From the **Install Connectors** window, select the version of **SVN Kit** (*do not use JavaHL*) that is compatible with SVN 1.6.x, and click **Finish**. This should cause an installation wizard to pop up. If this step does not work (e.g., because of a network error), see the Appendix below on alternative ways to download/install the Connectors.
9. Click through the installation wizard by clicking **Next/Finish/etc.**, and restart Eclipse when prompted. When Eclipse restarts, you should be back at the **SVN Repository Exploring** perspective. The left column of the main Eclipse window should have an **SVN Repositories** view instead of the usual **Project Explorer** view.

## Step 5. Checkout the example web app

To download the example web app, you'll need to use Subversion to "checkout" a copy of the example source code.

Go to the **SVN Repository Exploring** perspective (see Step 4), and perform the following steps to do the checkout:

1. At the top of the **SVN Repositories** view is a **New Repository Location** button—click it. This should open a **New Repository Location** window with fields for you to fill in.
2. Fill in the fields as follows, and click **Finish**.
  - **URL:** <https://svn.cs.memphis.edu/svn/comp7012-2014spring/examples/>
  - **User and Password:** enter your username and password
 This should add the repository to the **SVN Repositories** view. You may get a message about “master password” and/or “password recovery”. This is your OS trying to help you keep track of your passwords. Whatever option you choose is probably fine.
3. Expand the contents of the repository by clicking the triangle. You should see a **joker-simple** folder.
4. Expand the **joker-simple** folder, and you should see three folders: **trunk**, **branches**, and **tags**.
5. Right click on **trunk**, and select **Check Out**. This should cause a copy of the **joker-simple** project to download.
6. Switch to the **Java EE** perspective (by clicking the button that looks like  near the upper right of the Eclipse window). If you see the **joke-simple** project in the **Project Explorer**, the checkout was successful.
7. The project will be broken initially, indicated by a small red **✘**. To fix it, right click on the **joke-simple** project in the **Project Explorer**, and select **Maven > Update Project...** An **Update Maven Project** window should pop up. Click **OK**. The red **✘** should disappear.

## Step 6. Run the web app

To run the web app, perform the following steps from the **Java EE** perspective.

1. Right-click on the **joke-simple** project in the **Project Explorer**, and then click **Run As > Run on Server**. This should bring up the **Run on Server** wizard.
2. Click **Finish** to launch the web app.

## Step 7. One last thing to fix

For Maven to work properly in the future, you must rebuild its repository index:

1. Click **Window > Show View > Other...** This should pop up a **Show View** window.
2. Expand the **Maven** folder, and select **Maven Repositories**. Click **OK**. A **Maven Repositories** view should appear near the bottom of the Eclipse window.
3. In the **Maven Repositories** view, expand **Global Repositories** item to reveal the **central** item.
4. Right-click on **central**, and select **Rebuild Index**. This should pop up a confirmation dialog; click **OK**. This should cause Eclipse to rebuild its Maven index. Note: Eclipse may be *very slow* at rebuilding the index. It may take on the order of minutes. Furthermore, the progress (bottom right corner of Eclipse window) may sit at 0% for a very long time. Once it completes, you should be able to expand **central** and see many items, such as **abbot**, **acegisecurity**, etc.

## Submitting

To receive credit for this homework, you must demonstrate that you can run the web app at the start of class on the day the homework is due.

## Appendix: Alternative ways to install the Subversive SVN Connectors

### Way #1: Tell the Install New Software window where to find the plugin

With this approach, rather than leaving it to Eclipse to prompt you with the Install Connectors window, we take the bull by the horns, and initiate installing the Connectors ourselves.

1. In Eclipse, click **Help > Install New Software**. This should cause an **Install** window to appear.
2. Click the **Add** button at the far right of **Work with** field. This should pop up an **Add Repository** window.
3. In the window, enter this URL in both the **Name** and **Location** fields:  
<http://community.polarion.com/projects/subversive/download/eclipse/3.0/kepler-site/>  
This should cause the URL to be added to the **Work with** drop-down list.
4. Select the URL from the **Work with** drop-down list. If everything is working, you should see a **Subversive SVN Connectors** entry.
5. Expand the **Subversive SVN Connectors** entry, and check the **Subversive SVN Connectors** plugin and the **SVNKit 1.3.8** plugin.
6. Continue through the wizard to install the plugins, finally restarting Eclipse.

### Way #2: Manually download the plugins

If Eclipse is, for whatever reason, unable/unwilling to download the plugin, we can always just do it ourselves.

1. In your web browser, open this URL:  
<http://community.polarion.com/projects/subversive/download/eclipse/3.0/builds/>  
You should see a list of zip files.
2. Choose the newest zip file, and download it (e.g., saving it on your Desktop). At the time of writing, the newest zip was **Subversive-connectors-allplatforms-3.0.4.I20131116-1700.zip**.
3. Now, open Eclipse, and click **Help > Install New Software**. This should cause an **Install** window to appear.
4. Click the **Add** button at the far right of **Work with** field. This should pop up an **Add Repository** window.
5. Click the **Archive...** button. This should cause a file chooser to appear.
6. In the file chooser, select the zip file that you downloaded a moment ago. This should fill in the **Location** field with the path to the zip file.
7. Fill in the **Name** field however you like, and click **OK**. This should cause a new entry to be added to the **Work with** drop-down list.
8. Select the new entry from the **Work with** drop-down list. If everything is working, you should see **Subversive SVN Connectors** displayed in the table.

9. Expand the Subversive **SVN Connectors** entry, and check the **Subversive SVN Connectors** plugin and the **SVNKit 1.3.8** plugin.
10. Continue through the wizard to install the plugins, finally restarting Eclipse.