

A. Tomcat Installation on Vulcan machines (vulcan[1-8])

1. Login to one of the assigned server machine (vulcan[1-8]).
2. Extract contents of the file `~puri/apache-tomcat-6.0.14.tar.gz` using the following command from your home directory:

```
cd
tar xfz ~puri/apache-tomcat-6.0.14.tar.gz
```

This will create a directory called `apache-tomcat-6.0.14` in your home directory. If you type the command `ls apache-tomcat-6.0.14` you should see the following files/directories:

```
bin    lib      logs     RELEASE-NOTES  temp      work
conf  LICENSE NOTICE  RUNNING.txt    webapps
```

NOTE: Please use the file `~puri/apache-tomcat-6.0.14.tar.gz`, it has several jar files that are not in the original version from the Apache website. If you download this file directly from the Apache Tomcat website then you will also need to download `hibernate-3.2.5.ga.tar.gz` from <http://www.hibernate.org> as well as the PostgreSQL JDBC driver `postgresql-8.0-317.jdbc3.jar` from <http://jdbc.postgresql.org/>.

3. Setup `$CATALINA_HOME` and `$ANT_HOME` environment variables:

For Bash Shell:

Edit the file `~/.bash_profile` and add the following lines at the end of the file:

```
export CATALINA_HOME=~/apache-tomcat-6.0.14
export ANT_HOME=/netbin/apache-ant-1.6.5
export PATH=${ANT_HOME}/bin:${PATH}
```

Source `~/.bash_profile` file by typing `source ~/.bash_profile` (logout and login again instead)

For C Shell:

Edit the file `~/.cshrc` and add the following lines at the end of the file:

```
setenv CATALINA_HOME ~/apache-tomcat-6.0.14
setenv ANT_HOME /netbin/apache-ant-1.6.5
setenv PATH ${ANT_HOME}/bin:${PATH}
```

Source `~/.cshrc` file by typing `source ~/.cshrc` (logout and login again instead)

4. Change directory to `$CATALINA_HOME/conf` and make a copy of the file `server.xml` using the following commands:

```
cd $CATALINA_HOME/conf
cp server.xml server.xml.orig
```

5. Edit the file `$CATALINA_HOME/conf/server.xml` file and change the port # at lines 5, 50, 52, and 71 to the set of assigned ports (NOTE: Every student is assigned a set of unique port number to use, the default values in the file `server.xml` are 8005, 8080, 8443, and 8009 – change these to your assigned values (e.g., 21005, 21080, 21443, 21009)). Here is a sample output that shows the difference between the modified file and the original file:

```
$ diff server.xml server.xml.orig
5c5
< <Server port="48005" shutdown="SHUTDOWN">
---
> <Server port="8005" shutdown="SHUTDOWN">
50c50
< <Connector port="48080" protocol="HTTP/1.1"
---
> <Connector port="8080" protocol="HTTP/1.1"
52c52
< <Connector port="48080" protocol="HTTP/1.1"
      redirectPort="48443" />
---
> <Connector port="8080" protocol="HTTP/1.1"
      redirectPort="8443" />
71c71
< <Connector port="48009" protocol="AJP/1.3" redirectPort="48443" />
---
> <Connector port="8009" protocol="AJP/1.3" redirectPort="8443" />
$
```

6. In the directory `$CATALINA_HOME/conf` and make a copy of the file `tomcat-users.xml` using the command:

```
cp tomcat-users.xml tomcat-users.xml.orig
```

7. Edit the file `$CATALINA_HOME/conf/tomcat-users.xml` file and add the following lines after line 2:

```
<role rolename="manager"/>
<user username="cs631user" password="cs631passwd" roles="manager"/>
```

The modified file should look like this:

```
<?xml version='1.0' encoding='utf-8'?>
<tomcat-users>
  <role rolename="manager"/>
  <user username="cs631user" password="cs631passwd" roles="manager"/>
</tomcat-users>
```

8. Make sure your `$JAVA_HOME` is pointing to `/netbin/java` by executing:


```
echo $JAVA_HOME
```
9. If this is not the case, edit your `~/.bashrc` file (Bash Shell Users) or `~/.cshrc` file (C Shell Users) to reflect this and then source it again. This should be already done from the previous homework, if you did not change it earlier, here is what you need to change:

For Bash Shell:

```
export JAVA_HOME=/netbin/java
export PATH=${JAVA_HOME}/bin:${PATH}
```

For C Shell:

```
setenv JAVA_HOME /netbin/java
setenv PATH ${JAVA_HOME}/bin:${PATH}
```

10. Start the server by executing the command:


```
$CATALINA_HOME/bin/startup.sh
```

You should see the following output:

```
Using CATALINA_BASE:   /nethome/facstaff/puri/apache-tomcat-6.0.14
Using CATALINA_HOME:   /nethome/facstaff/puri/apache-tomcat-6.0.14
Using CATALINA_TMPDIR: /nethome/facstaff/puri/apache-tomcat-6.0.14/temp
Using JRE_HOME:        /netbin/java
```

11. Test the server is running appropriately by pointing your browser to `http://HOSTNAME:PORT/` where HOSTNAME is one of the Vulcan machines and PORT is the assigned main port (the number that replaced 8080 in server.xml). A sample snapshot of the main page is shown below:

Administration
[Status](#)
[Tomcat Manager](#)

Documentation
[Release Notes](#)
[Change Log](#)
[Tomcat Documentation](#)

Tomcat Online
[Home Page](#)
[FAQ](#)
[Bug Database](#)
[Open Bugs](#)
[Users Mailing List](#)
[Developers Mailing List](#)
[IRC](#)

Miscellaneous
[Servlets Examples](#)
[JSP Examples](#)
[Sun's Java Server Pages Site](#)
[Sun's Servlet Site](#)

If you're seeing this page via a web browser, it means you've setup Tomcat successfully. Congratulations!

As you may have guessed by now, this is the default Tomcat home page. It can be found on the local filesystem at:

```
$CATALINA_HOME/webapps/ROOT/index.html
```

where "\$CATALINA_HOME" is the root of the Tomcat installation directory. If you're seeing this page, and you don't think you should be, then either you're either a user who has arrived at new installation of Tomcat, or you're an administrator who hasn't got his/her setup quite right. Providing the latter is the case, please refer to the [Tomcat Documentation](#) for more detailed setup and administration information than is found in the INSTALL file.


NOTE: For security reasons, using the administration webapp is restricted to users with role "admin". The manager webapp is restricted to users with role "manager". Users are defined in `$CATALINA_HOME/conf/tomcat-users.xml`.

Included with this release are a host of sample Servlets and JSPs (with associated source code), extensive documentation, and an introductory guide to developing web applications.

Tomcat mailing lists are available at the Tomcat project web site:

- users@tomcat.apache.org for general questions related to configuring and using Tomcat
- dev@tomcat.apache.org for developers working on Tomcat

Thanks for using Tomcat!

Powered by  **TOMCAT**
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NOTE: You must be using a machine within the department to open this website due to the department firewall. Otherwise you have to setup a tunnel though moat.cis.uab.edu. For instructions on setting up an SSH tunnel and connect to a machine inside CIS firewall please see: <http://www.cis.uab.edu/cs633/spring2006/SSHTunnelSetup.html> (this example shows how to setup an SSH tunnel for the machine titanic.hpcl.cis.uab.edu, you have to specify the appropriate Vulcan machine instead of titanic.hpcl.cis.uab.edu as the Destination Host).

12. Click on JSP Examples under Examples on the right side, then click on Execute to test any of the JSP examples.

13. To shutdown the server, use the command:

```
$CATALINA_HOME/bin/shutdown.sh
```

B. Install sample web application

1. Extract the file `~puri/cs631/sample.tar.gz` in the directory `$HOME/cs631/homework3` using the following command:

```
tar xzf ~puri/cs631/sample.tar.gz
```

This will create the following directory structure (you will also find two files `build.xml` and `index.html` in the directory `sample`):

```
sample
  docs
  src (directory where all the Java source files will reside)
  web (directory where all HTML, JSP, and images reside)
```

2. Create a file called `build.properties` in your home directory, and enter the following lines to file `build.properties` (Note: You have to change this to reflect your home directory and port #):

```
# Tomcat installation directory ***CHANGE THE LINE BELOW***
catalina.home=/nethome/facstaff/puri/apache-tomcat-6.0.14
```

```
# Manager webapp URL ***CHANGE THE LINE BELOW***
manager.url=http://localhost:48080/manager
```

```
# Manager webapp username and password
manager.username=cs631user
manager.password=cs631passwd
```

```
# Context path to install this application on
app.path=/sample
```

3. Start the tomcat server (if it is not running) using the command given in A.10, check the webserver is running by connecting to the server as described in step A.11. Then deploy the application using the following command from the directory `$HOME/cs631/homework3/sample`:

```
ant install
```

If everything goes smoothly you should see something like this (last step is `install`):

```
puri@vulcan8:~/cs631/homework3/sample[1213]$ ant install
Buildfile: build.xml
```

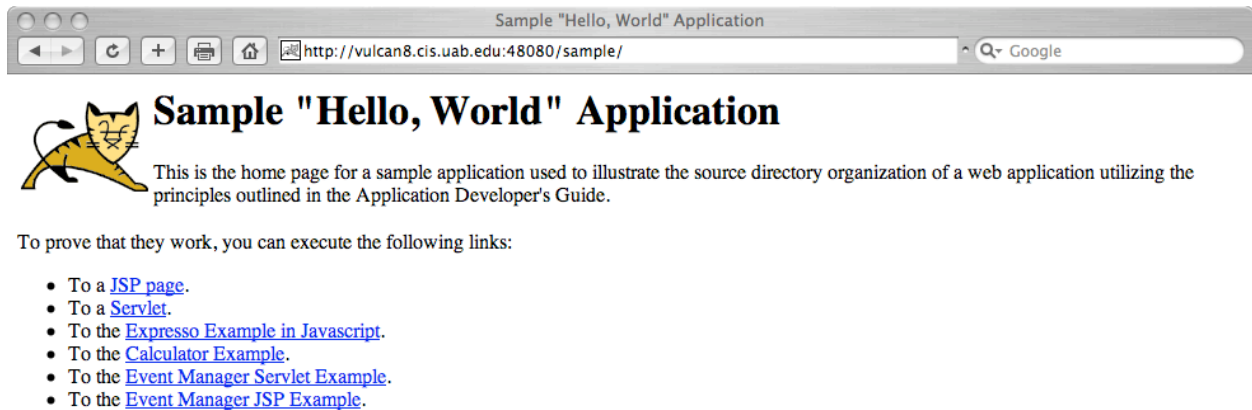
```
prepare:
  [mkdir] Created dir:
/nethome/facstaff/puri/cs631/homework3/sample/build
  [mkdir] Created dir:
/nethome/facstaff/puri/cs631/homework3/sample/build/WEB-INF
  [mkdir] Created dir:
/nethome/facstaff/puri/cs631/homework3/sample/build/WEB-INF/classes
  [copy] Copying 8 files to
/nethome/facstaff/puri/cs631/homework3/sample/build

compile:
  [javac] Compiling 8 source files to
/nethome/facstaff/puri/cs631/homework3/sample/build/WEB-INF/classes
  [javac] Note: Some input files use unchecked or unsafe operations.
  [javac] Note: Recompile with -Xlint:unchecked for details.
  [copy] Copying 4 files to
/nethome/facstaff/puri/cs631/homework3/sample/build/WEB-INF/classes

install:
  [deploy] OK - Deployed application at context path /sample

BUILD SUCCESSFUL
Total time: 2 seconds
puri@vulcan8:~/cs631/homework3/sample[1214]$
```

4. If you are in the department open a browser and connect to the URL: <http://HOSTNAME:PORT/sample/>. If you have followed all the steps correctly so far you should see the following screen:



You can click on each link to view the corresponding example. You can use the directory structure and the ant build file provided in this example to develop your JSP application. Just include your JSP files in the web directory, corresponding Java source files in the src directory, and use ant to compile, build, and install the web application. Look at the messages in the log file \$CATALINA_HOME/logs/catalina.out to determine problems during development.

5. To remove an installed application use:
- ```
ant remove
```

**Resources:**

1. HTML Tutorial – <http://www.w3schools.com/html/>
2. Javascript Tutorial – <http://www.w3schools.com/js/>
3. JSP Tutorial – <http://www.jsptut.com>
4. Servlets and JavaServer Pages Tutorial – <http://www.apl.jhu.edu/~hall/java/Servlet-Tutorial/>
5. Hibernate Tutorial – [http://www.hibernate.org/hib\\_docs/v3/reference/en/html/tutorial.html](http://www.hibernate.org/hib_docs/v3/reference/en/html/tutorial.html)