Deploying Web Applications with Eclipse and Tomcat

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For customized training related to JavaScript or Java, email hall@coreservlets.com

Marty is also available for consulting and development support

Taught by lead author of *Core Servlets & JSP*, co-author of *Core JSF* (4th Ed), and this tutorial.

Available at public venues, or custom versions can be held on-site at your organization.

- **Courses developed and taught by Marty Hall**
  - JavaScript, jQuery, Ext JS, JSF 2.3, PrimeFaces, Java 8 programming, Spring Framework, Spring MVC, Android, GWT, custom mix of topics
  - Courses available in any state or country.
  - Maryland/DC companies can also choose afternoon/evening courses.
- **Courses developed and taught by coreservlets.com experts (edited by Marty)**
  - Hadoop, Hibernate/JPA, HTML5, RESTful Web Services

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Topics in This Section

- **Motivation**
  - Why a real Web server is needed for the upcoming Ajax sections
- **Setting up the required software**
  - Installing Java SE
  - Getting Apache Tomcat
  - Installing Eclipse (Java EE version)
  - Telling Eclipse about Tomcat
- **Creating a Dynamic Web Project**
  - A project that can run on a Web server
- **Deploying a Dynamic Web Project**
  - Running it on Apache Tomcat

Overview

Need Web Server

- **Next topic is Ajax in jQuery**
  - Using jQuery to make a network connection to the server, retrieve some data, and insert results into page
- **Required**
  - Your Web page needs to run on a server that supports HTTP
    - Until now, you could just drag HTML file onto browser to test everything
- **Preferred**
  - Your server can produce dynamic results (results that change each time or that are based on what is passed to the server)
    - Will work with PHP, .NET, Ruby, as well as Java. If you know any server-side language already and how to deploy with it, skip this section and use what you already know.
    - Even if you never learn anything about Java, I will provide very simple server-side scripts you can use for Ajax. You can even use static text files, but it is more interesting if you have data that changes for each request.
      - But even with static text files, your pages must run on server in order for Ajax calls to work

Steps

- **Install Java**
  - The server will use Java even if you never write or see any Java code
- **Install Apache Tomcat**
  - A simple Web server that supports Java
- **Install Eclipse**
  - An editor (development environment) that is good at editing HTML, JavaScript, CSS, etc., but that also knows how to create and deploy applications to Tomcat
- **Make a dynamic Web app in Eclipse**
  - An app that Eclipse knows how to send to Tomcat
- **Deploy the app**
  - Launch it on Tomcat

Installing Java, Tomcat, and Eclipse

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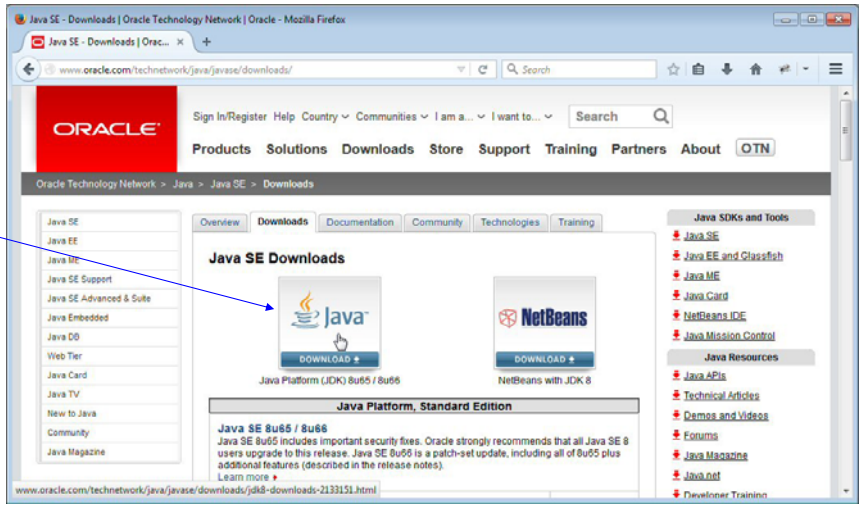
Installing Java SE (Standard Edition)

- **Download latest version from Oracle**
  - http://www.oracle.com/technetwork/java/javase/downloads/
    - Or just Google "download java se"
- **Install it**
  - Run installer and accept all defaults



Download and Unzip Apache Tomcat

- **Start at http://tomcat.apache.org**
  - Choose download link on left, then ZIP version
    - Tomcat 7 or 8
- **Either way, just unzip the file**
  - E.g., resulting in something like C:\apache-tomcat-7.0.34
- **Remember the location**
  - You will tell Eclipse about it later

Download and Unzip Eclipse (Java EE Version)

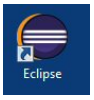
- **Start at http://www.eclipse.org/**
  - Choose download link on top right, then "Eclipse IDE for Java EE Developers"
- **Get installer**
  - Run installer, resulting in something like C:\eclipse
- **Or, get Zip version: just unzip the file**
  - E.g., resulting in something like C:\eclipse
- **Remember the location**
  - You will later launch Eclipse by clicking on eclipse.exe in the folder where you unzipped Eclipse

Launching and Configuring Eclipse

Running Eclipse

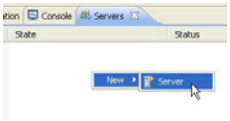
- **Unzip the downloaded file (no installer!)**
  - Unzip anywhere; call the folder you unzip into "installDir"
- **Double click eclipse.exe**
  - From *installDir*
- **Click on "Workbench" icon**
  - Next time you bring up Eclipse, it will come up in workbench automatically

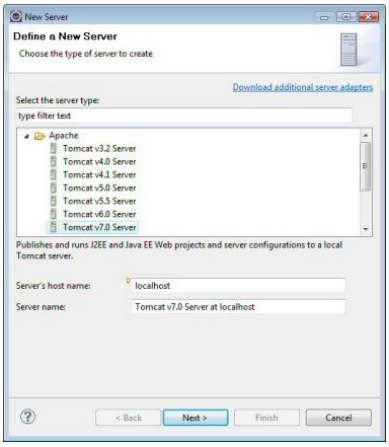
- **Shortcut**
  - Many developers put Eclipse link on their desktop
    - R-click eclipse.exe, Copy, then go to desktop, R-click, and Paste Shortcut (not just Paste!)

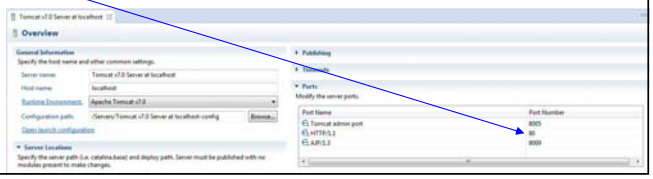


Configuring Eclipse

- **Tell Eclipse about Tomcat**
  - Click on Servers tab at bottom. R-click in window
  - New, Server, Apache, Tomcat v7.0, Next, navigate to folder where you unzipped Tomcat, Finish
- **Change the Tomcat port to 80**
  - Double click Tomcat at the bottom
  - Change HTTP/1.1 port on right side from 8080 to 80, then control-s to save
  - If you fail to do this, you will have to use http://localhost:**8080**/... everywhere that I use http://localhost/...

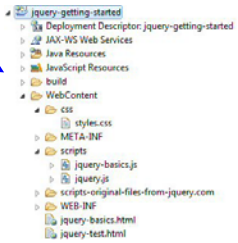


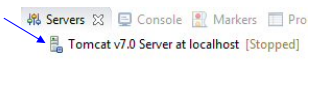


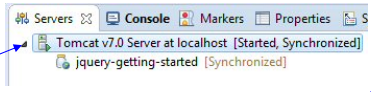


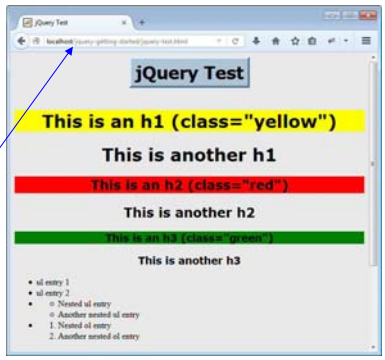
Example

- **Imported jquery-getting-started (app from last lecture)**
  - Available at http://www.coreservlets.com/javascript-jquery-tutorial/
- **Deployed app to Tomcat**
  - R-clicked Tomcat at bottom
  - Chose Add and Remove
  - Selected jquery-getting-started and pressed Add arrow
  - Pressed Finish
- **Started Tomcat**
  - R-clicked Tomcat at bottom
  - Chose Start (or Restart if running previously)
- **Accessed page**
  - http://localhost/jquery-getting-started/jquery-test.html
    - In general, http://localhost/your-project/your-file.html
    - Or http://localhost:8080/your-project/your-file.html if you did not change Tomcat port





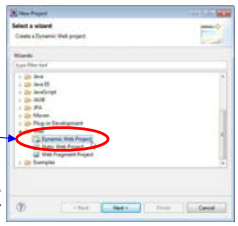




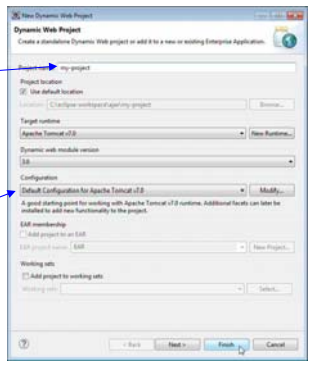
Creating and Deploying Apps in Eclipse

Create a Dynamic Web Project

- **Create project**
  - File → New → Project → Web → Dynamic Web Project
    - Next time, you can do File → New → Dynamic Web Project



- **Give it a name**
  - Choose a name that would be legal in a URL (no spaces)
- **Specify it is for Tomcat**
  - Choose "Default Configuration for Apache Tomcat"

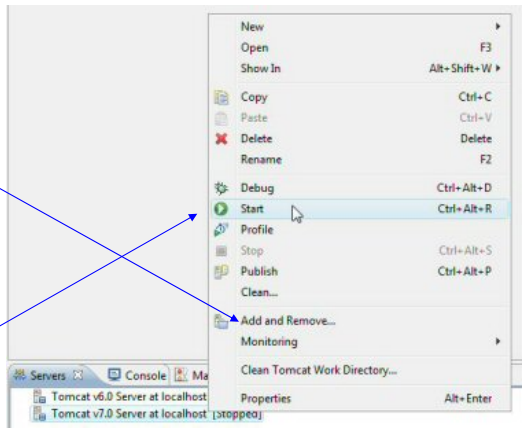


Put Content in Your Project

- **Main folder: WebContent**
  - Other folders are only for Java developers and can be ignored
- **Typical layout**
  - WebContent
    - Your HTML files
    - For initial testing, just use a simple HTML file you created earlier in the course
  - WebContent/css
    - Your style sheets
  - WebContent/scripts
    - Your JavaScript files
  - WebContent/images
    - Your images

Deploy the App to Tomcat

- **Deploy project**
  - Select "Servers" tab at bottom
  - R-click on Tomcat
  - Choose "Add and Remove"
  - Choose project
  - Press "Add"
  - Click "Finish"
- **Start Server**
  - R-click Tomcat at bottom
  - Start (use "Restart" if Tomcat already running)
- **Test URL**
  - http://localhost/your-project/your-file.html



Wrap-Up

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Summary

- **Install necessary software**
  - Java (run installer)
  - Apache Tomcat (unzip)
  - Eclipse (unzip and then configure or use installer and then configure)
- **Launch Eclipse**
  - Click on .exe icon from install folder, or make shortcut on desktop and click that
- **Make app in Eclipse**
  - File → New → Dynamic Web Project
  - Put files in/under WebContent folder
- **Deploy app**
  - R-click Tomcat, Add and Remove, start Tomcat
  - Use http://localhost/project-name/file-name.html

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http://www.coreservlets.com/javascript-jquery-tutorial/ -- Tutorial on JavaScript, jQuery, and jQuery UI
http://courses.coreservlets.com/Course-Materials/java.html – General Java programming tutorial
http://www.coreservlets.com/java-8-tutorial/ – Java 8 tutorial
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