

## Chapter 3

# How to work with NetBeans and Tomcat

# Objectives

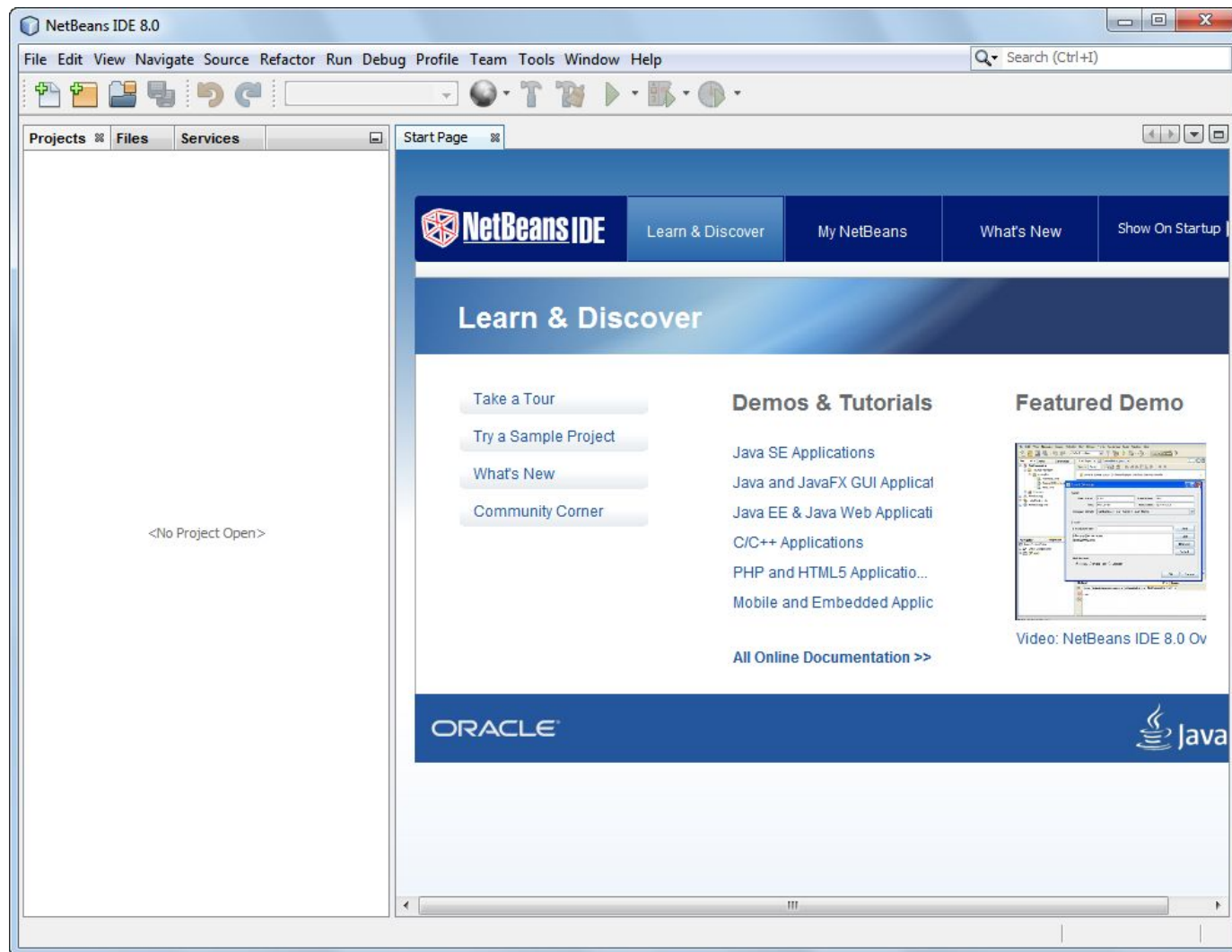
## Applied

1. Use NetBeans to develop and test web applications that consist of HTML files, JSP files, servlets, regular Java classes, and XML files.
2. Use NetBeans to build, deploy, and run a web application on a local server.
3. Use NetBeans to add a class library or JAR file to a project.
4. Use NetBeans to register a database connection.
5. Use NetBeans to start or stop a local web server.

## Knowledge

6. In general terms, describe a NetBeans project.
7. In general terms, describe the difference between the Projects window, the Files window, and the Services window for a NetBeans project.

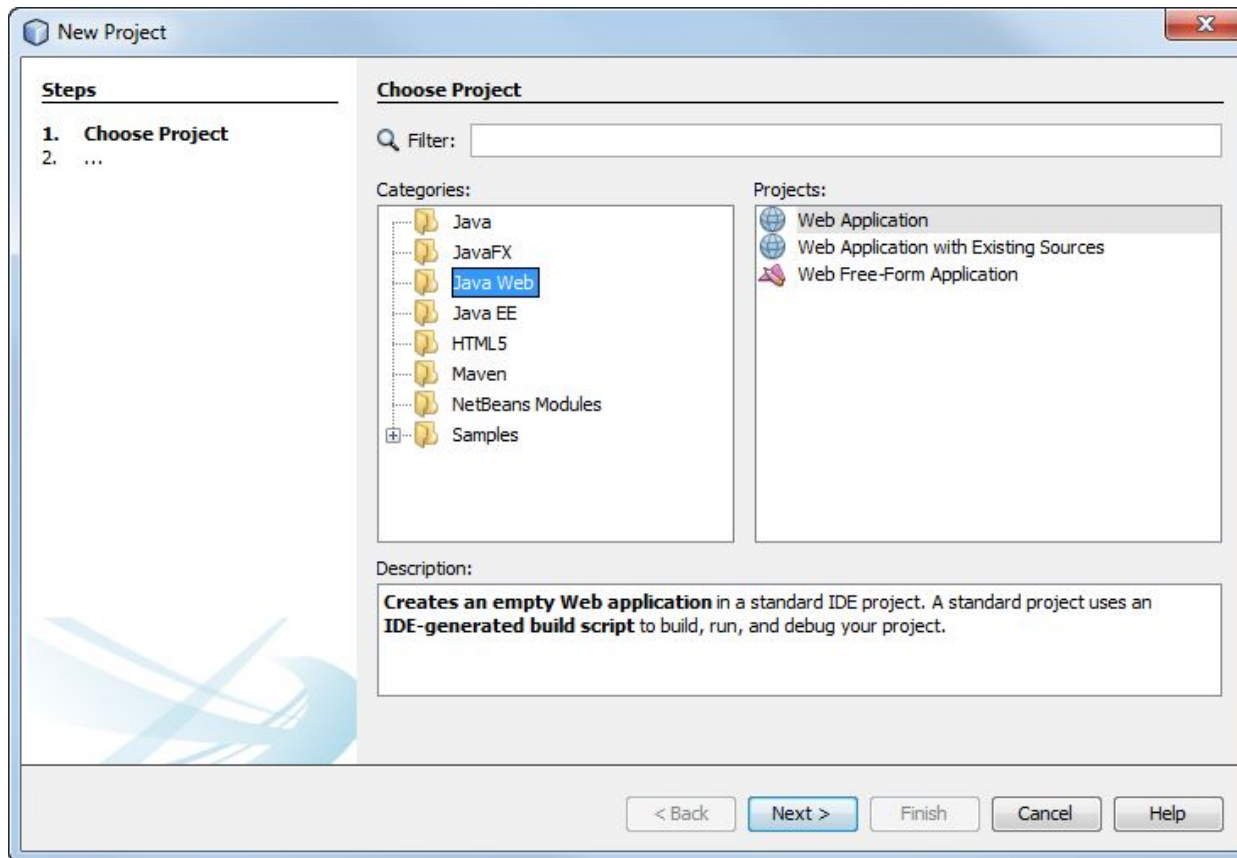
# The Start page



# How to create a new project

- Select File→New Project

## The first dialog box for a new web application



# The second dialog box for a new web application

**New Web Application**

**Steps**

1. Choose Project
- 2. Name and Location**
3. Server and Settings
4. Frameworks

**Name and Location**

Project Name:

Project Location:

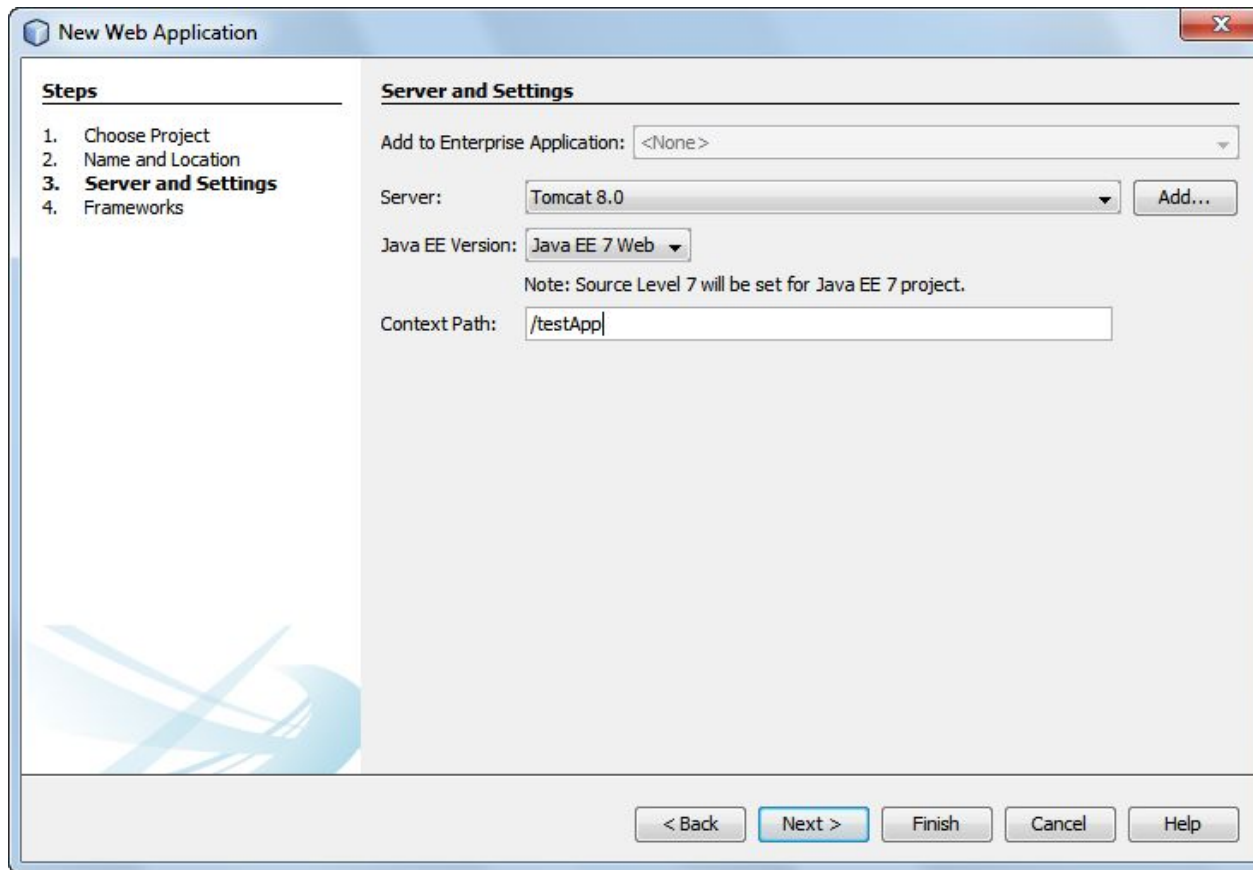
Project Folder:

☐ Use Dedicated Folder for Storing Libraries

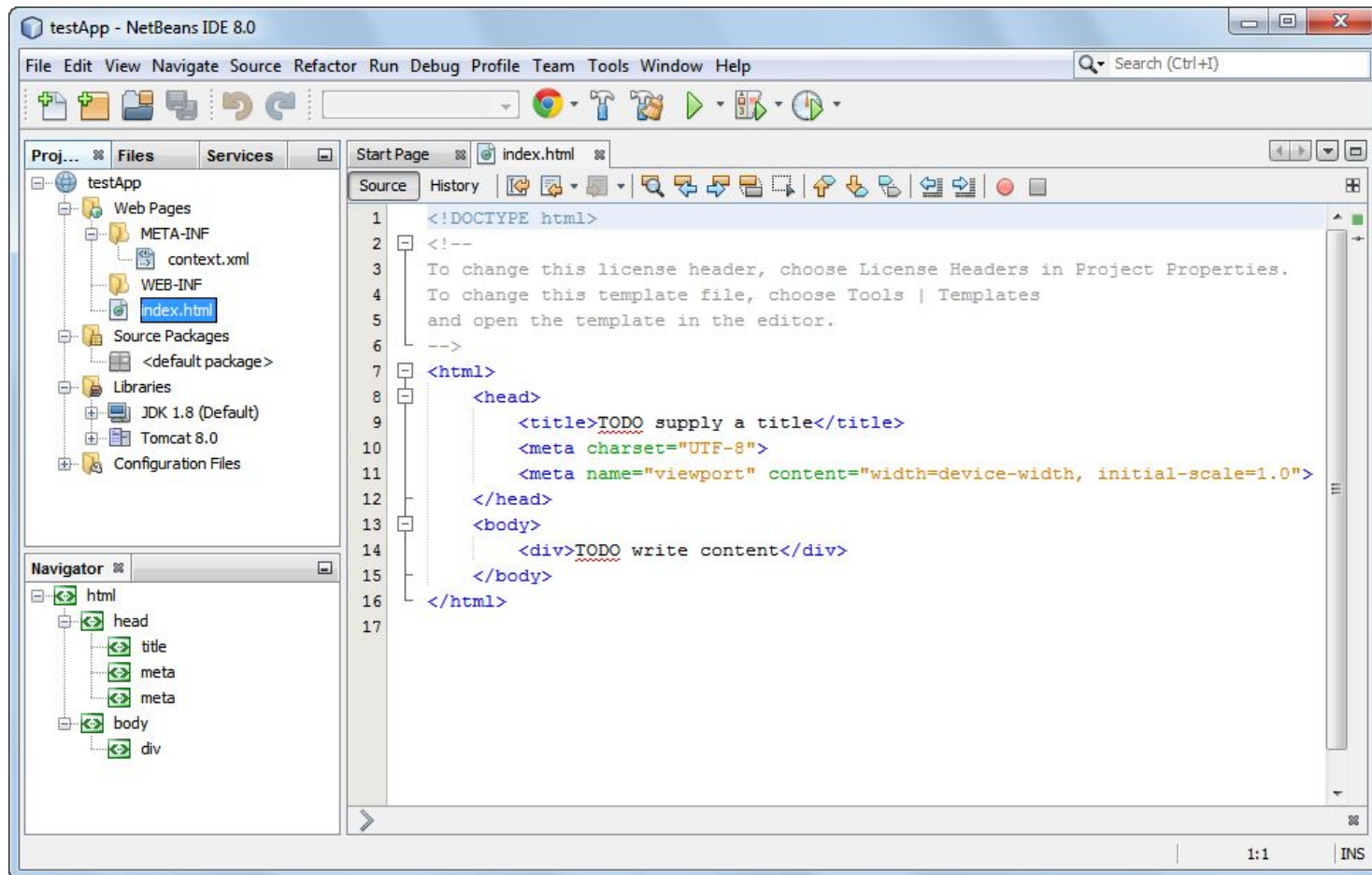
Libraries Folder:

Different users and projects can share the same compilation libraries  
(see Help for details).

# The third dialog box for a new web application



# The default web application



## How to work files

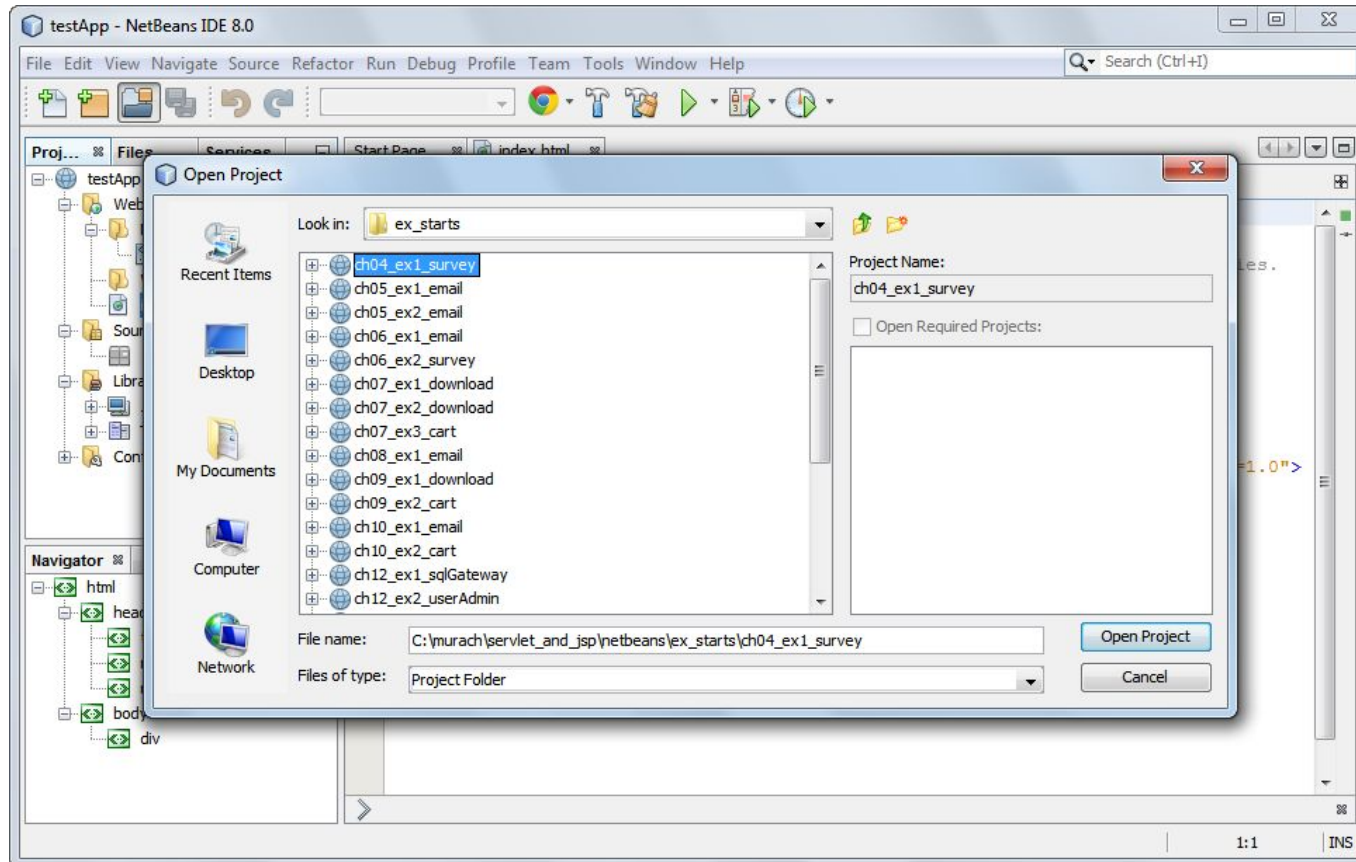
- To open a file in the appropriate editor, double-click on it.
- To rename a file, right-click on it and select Rename.
- To delete a file, right-click on it and select Delete.



# How to open an existing project

- Select File→Open Project

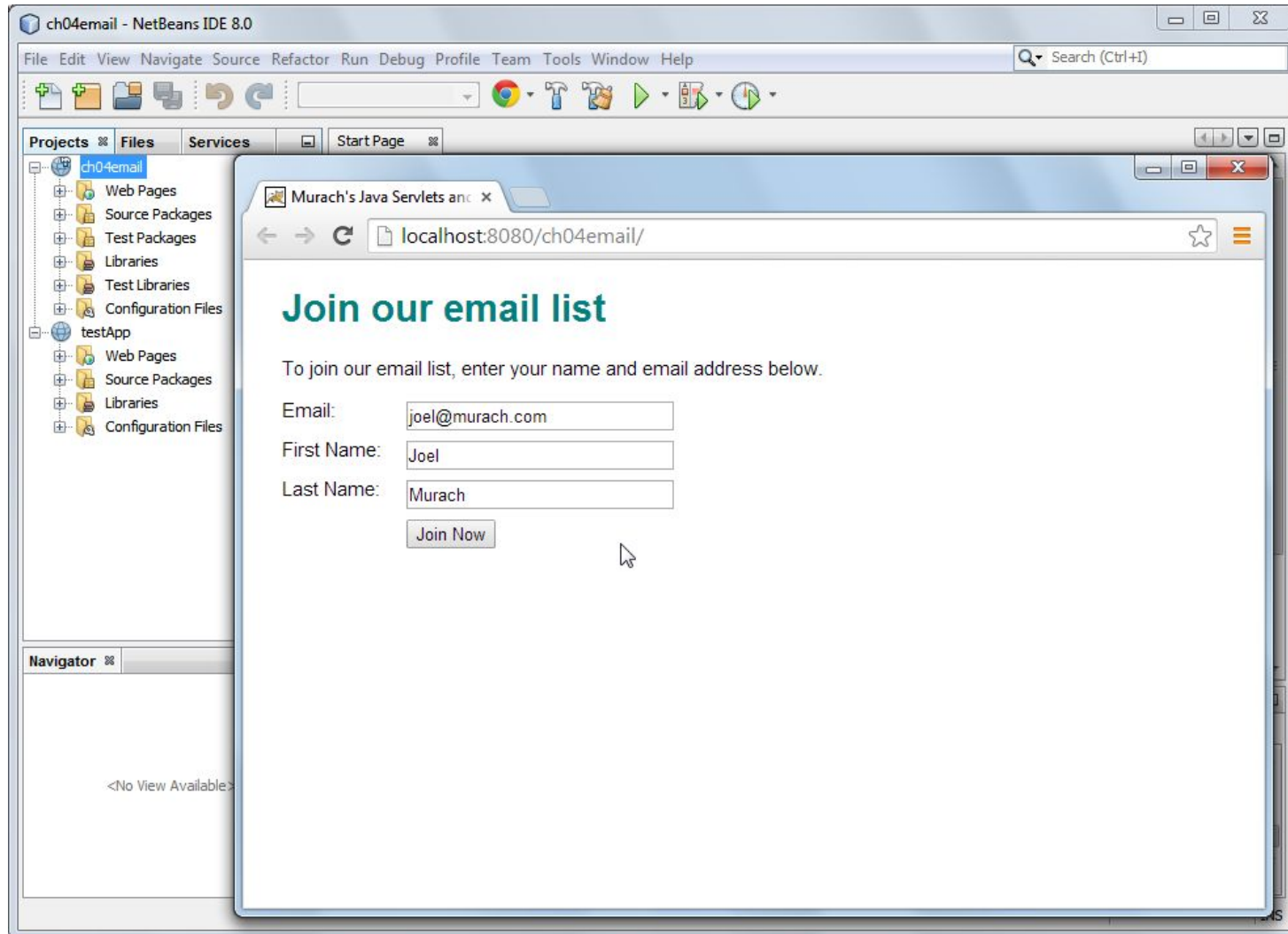
## The Open Project dialog box



## How to work with an existing project

- To remove a project, right-click on the project, and select Close.
- To run the current project, press F6 or select Run Project from the toolbar or the Run menu.
- To run a specific file, right-click on the file and select Run File. This deploys the web application and displays the file in the default web browser.
- To change the default browser, select Tools→Options, select the General category, and select the browser that you want to use.
- To view information about a test run, use the tabs in the Output window. To open this window, use the Window→Output command. To clear the data from one of the tabs, right-click in the window and select Clear.

# The web browser when you run a project



## When you run a web application, NetBeans automatically...

- Compiles all files that need to be compiled
- Deploys the files for the project to the specified server
- Starts the default web browser
- Displays the first page of the application in that browser.

## How to add HTML or JSP files to a project

- To add an HTML file, right-click on the Web Pages folder or one of its subfolders and select New→HTML. Specify the name and location of the file.
- To add a JSP file, right-click on the Web Pages folder or one of its subfolders and select New→JSP. Specify the name and location of the file.

# The New File dialog box

**New JSP**

**Steps**

1. Choose File Type
- 2. Name and Location**

**Name and Location**

File Name:

Project:

Location:

Folder:

Created File:

**Options:**

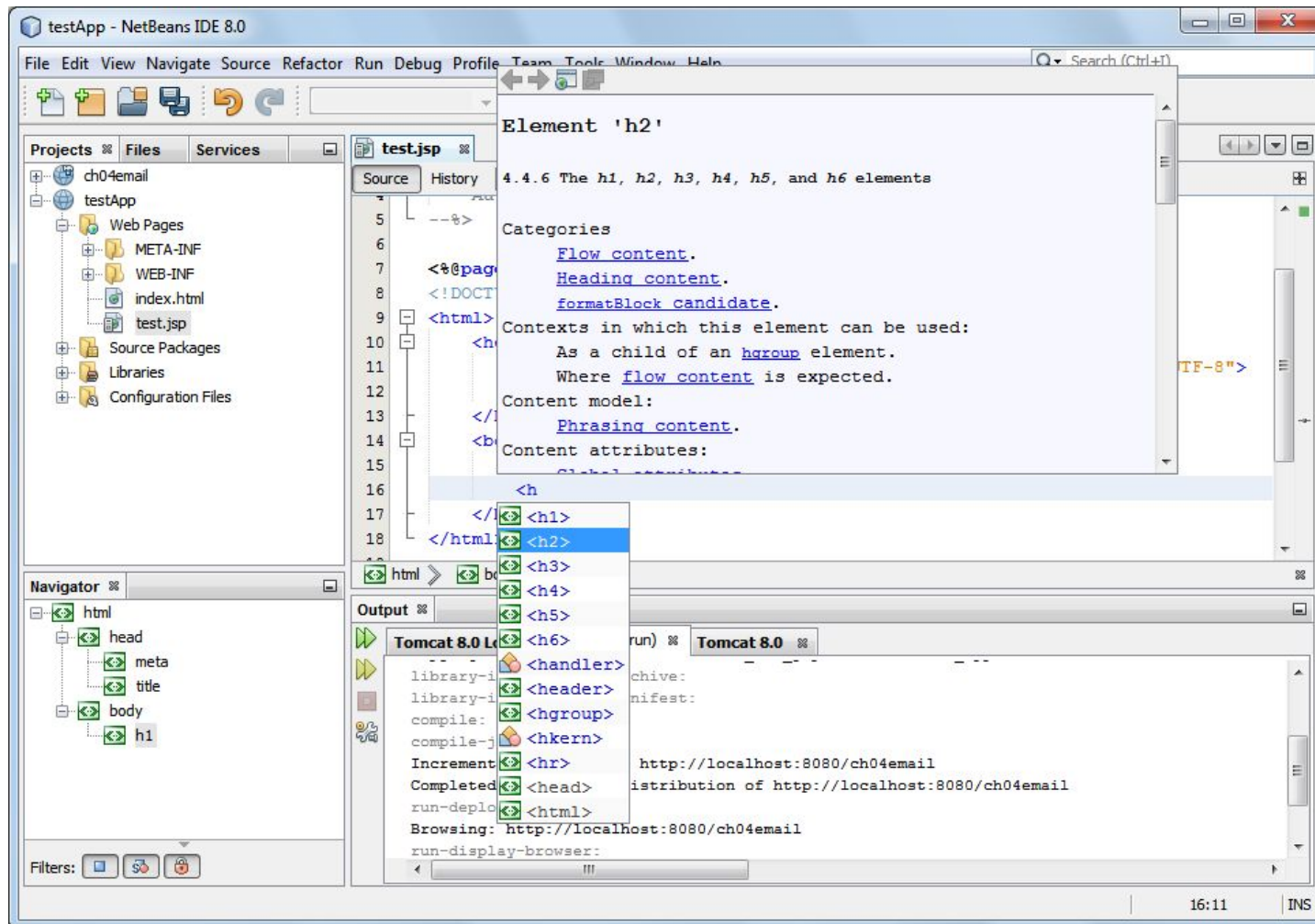
☒ JSP File (Standard Syntax) ☐ Create as a JSP Segment

☐ JSP Document (XML Syntax)

**Description:**

Murach's Java Servlets/JSP (3rd Ed.), C3

# The HTML and JSP editor



## How to add Java classes and servlets to a project

- To add a Java class, right-click on one of the project folders and select New→Java Class. Specify the name and location of the file.
- To specify a package for the class, use the Package combo box to select an existing package or to enter the name for a new package.
- To add a servlet, right-click on the package, and select New→Servlet. Specify a name and URL for the servlet.



# The New Java Class dialog box

**New Java Class**

**Steps**

1. Choose File Type
2. **Name and Location**

**Name and Location**

Class Name:

Project:

Location:

Package:

Created File:

< Back   Next >   **Finish**   Cancel   Help

# The first New Servlet dialog box

**New Servlet**

**Steps**

1. Choose File Type
- 2. Name and Location**
3. Configure Servlet Deployment

**Name and Location**

Class Name:

Project:

Location:

Package:

Created File:

< Back   Next >   Finish   Cancel   Help

# The second dialog box

The screenshot shows the 'New Servlet' dialog box with the 'Configure Servlet Deployment' step selected. The 'Steps' pane on the left lists three steps: 'Choose File Type', 'Name and Location', and 'Configure Servlet Deployment'. The main area contains instructions to register the Servlet with the application by giving it an internal name and specifying URL patterns. A checkbox labeled 'Add information to deployment descriptor (web.xml)' is checked. Below this are text fields for 'Class Name' (murach.TestServlet), 'Servlet Name' (TestServlet), and 'URL Pattern(s)' (/testServlet). An 'Initialization Parameters' section features a table with 'Name' and 'Value' columns, and buttons for 'New', 'Edit...', and 'Delete'. At the bottom are navigation buttons: '< Back', 'Next >', 'Finish' (highlighted in blue), 'Cancel', and 'Help'.

**New Servlet**

**Steps**

1. Choose File Type
2. Name and Location
3. **Configure Servlet Deployment**

**Configure Servlet Deployment**

Register the Servlet with the application by giving the Servlet an internal name (Servlet Name). Then specify patterns that identify the URLs that invoke the Servlet. Separate multiple patterns with commas.

☒ Add information to deployment descriptor (web.xml)

Class Name:

Servlet Name:

URL Pattern(s):

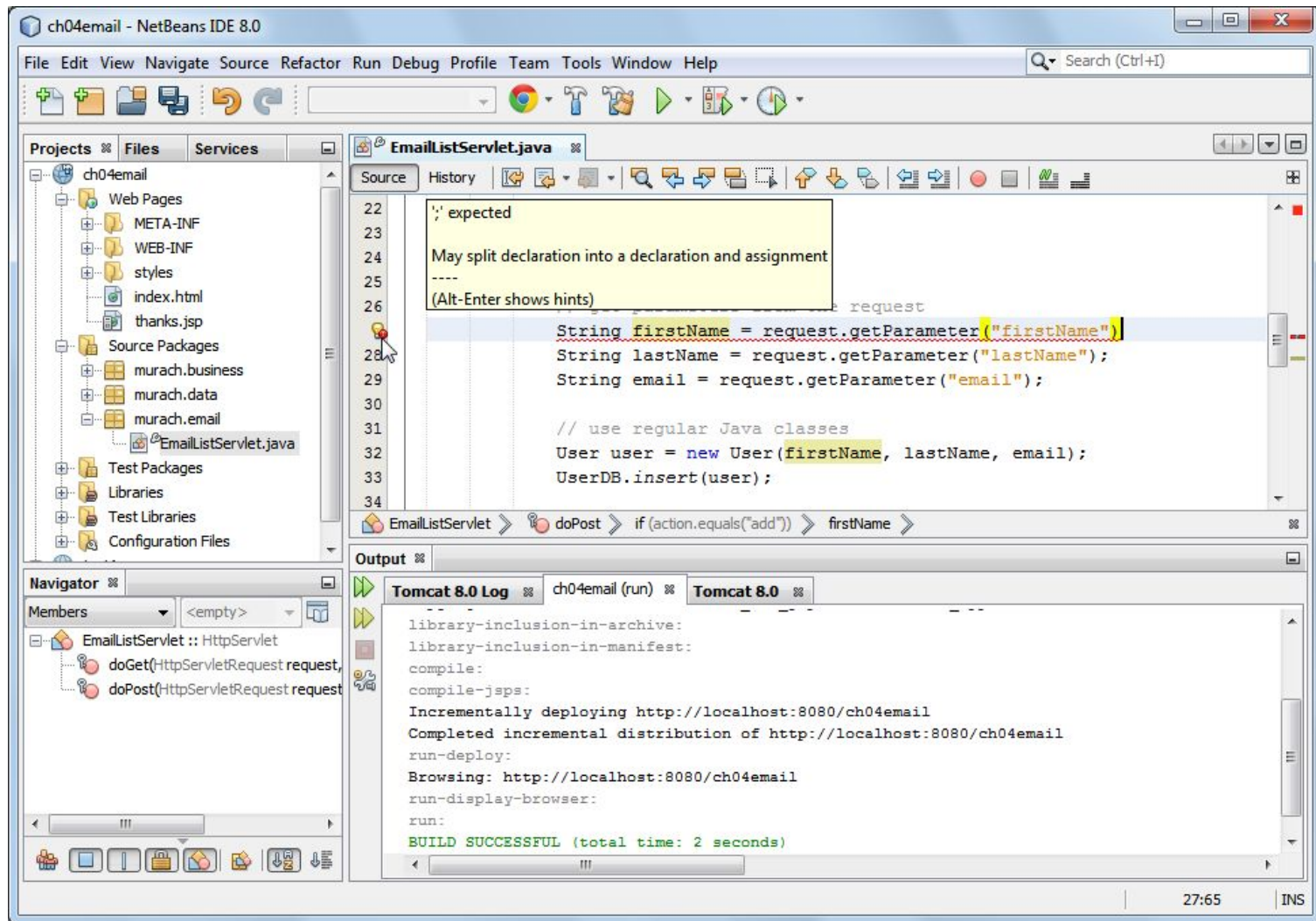
Initialization Parameters:

Name	Value
------	-------

New Edit... Delete

< Back Next > Finish Cancel Help

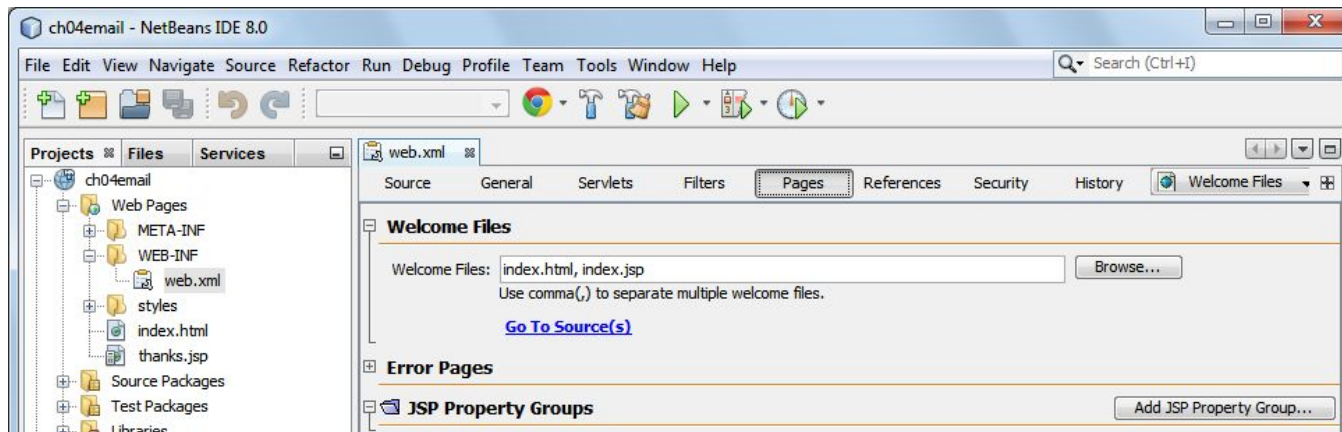
# The Java editor with an error displayed



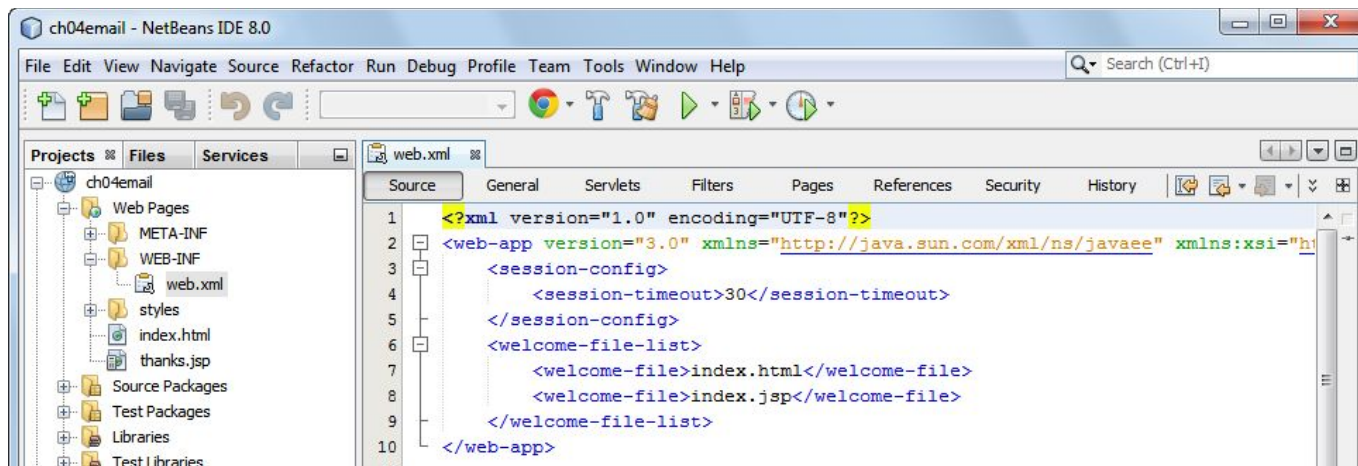
## How to work with code completion

- After you enter a class or object name and a period, the code completion feature provides a list of possible entries. Then, select an item and press the Tab or Enter key to insert the code into the file.
- To activate the code completion feature at other points in your entries, press Ctrl+Spacebar.

## The XML editor with the Pages tab displayed



## The XML editor with the Source tab displayed

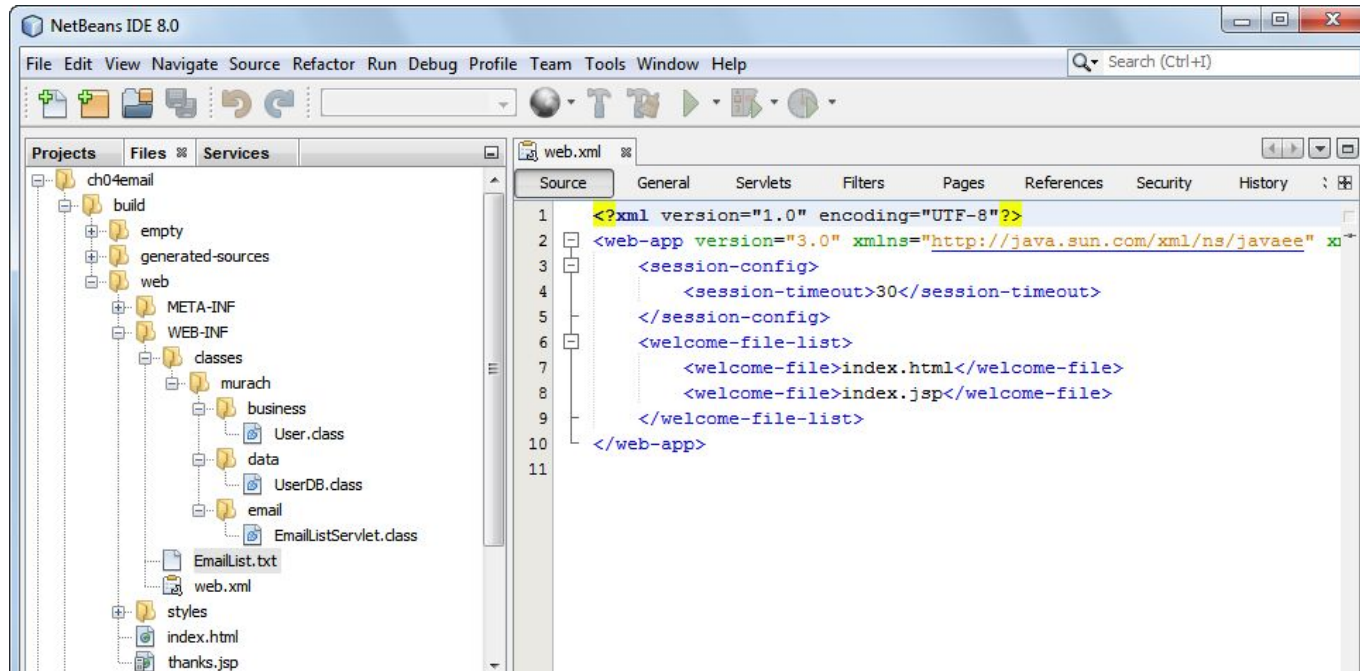


## How to work with XML files

- To edit an XML file, double-click on it to open it. Then, use the tabs across the top of the page to modify the web.xml file. Use the Source tab to manually edit the file in the XML editor.
- To validate an XML file against its schema, right-click on the file and select Validate XML. The results of the validation will be displayed in an XML Check window within the Output window.



# The Files window for the ch04email project





## The folders that NetBeans uses

Folder	Description
build\web	All folders and files for the web application after it has been built.
dist	The WAR file for the application.
nbproject	The configuration files and build scripts.
src	The source code for the Java files and servlets.
web	The HTML, JSP, and XML files for the application.

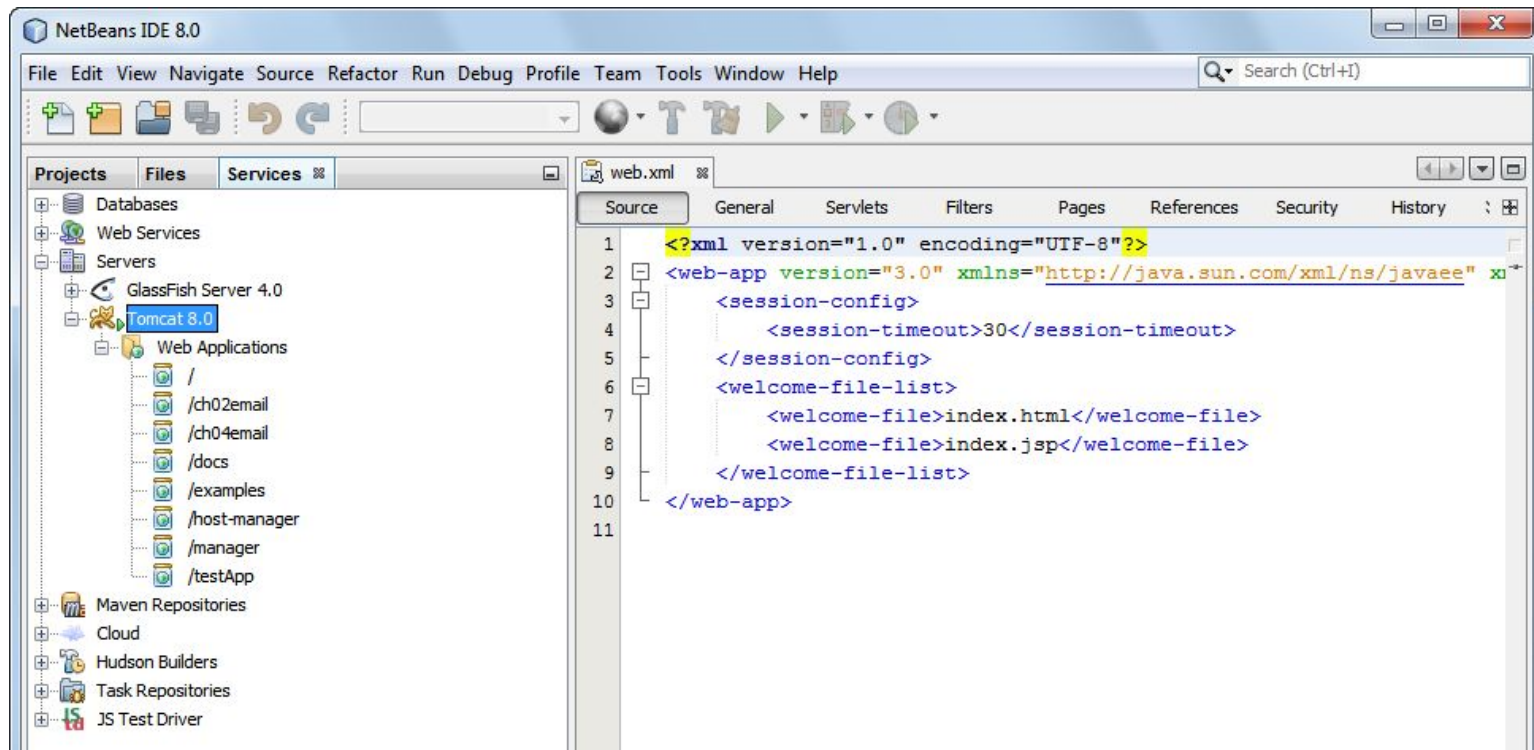
## How to add existing files to a project

- Copy the files from the Windows Explorer or Mac Finder and paste them into an appropriate folder in the Projects window or the Files window.

## How to deploy an application to a remote server

- Copy the WAR file for the application from the dist folder to the appropriate folder for web applications on the remote server.

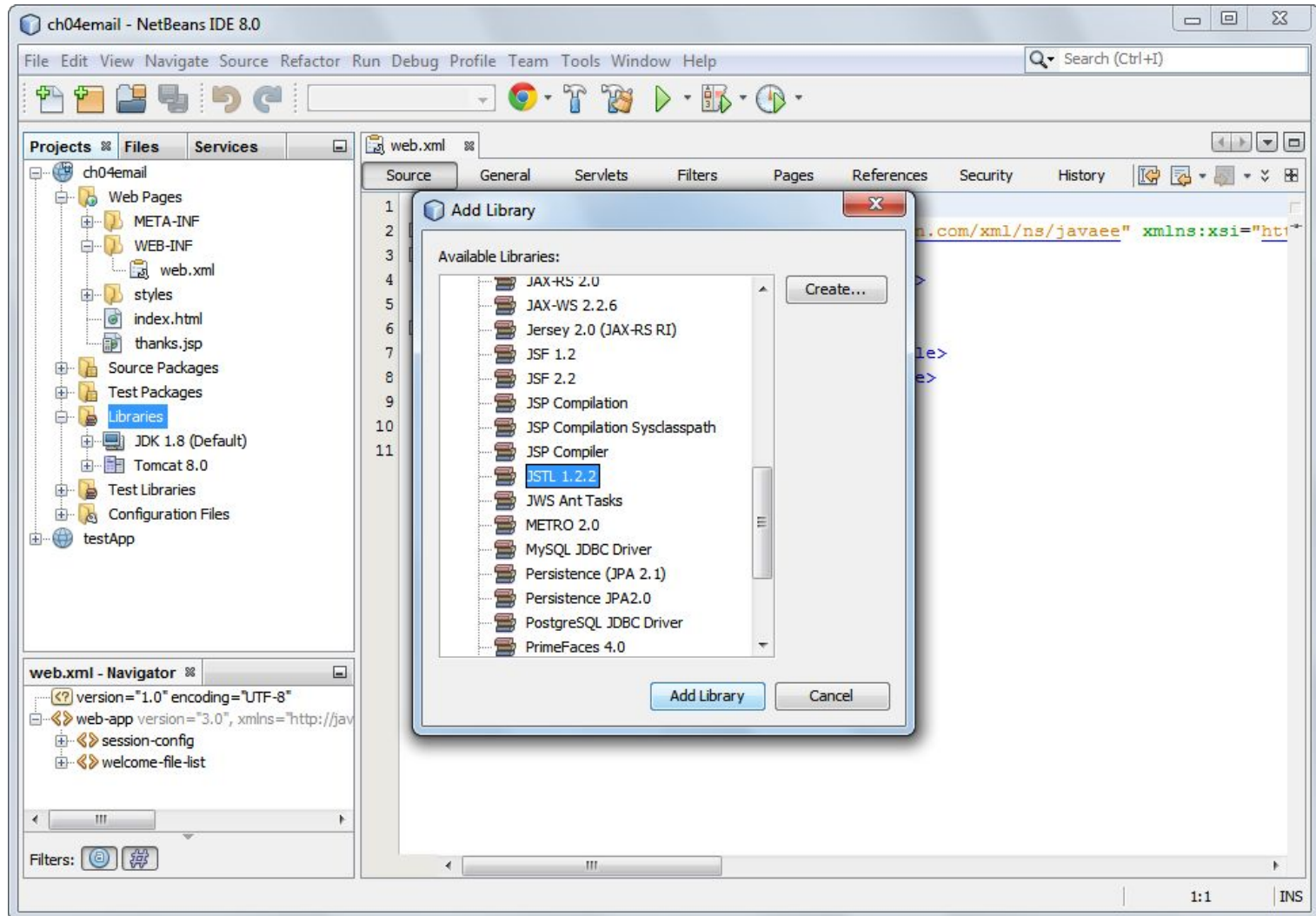
# Services window with Servers group displayed



## How to work with servers

- To view a server, expand the Servers group. Then, right-click on a server to start, stop, restart, or refresh it.
- To view the web applications that are running on the Tomcat server, expand the Web Applications folder for the server. Then, right-click on an application to start, stop, or undeploy it.

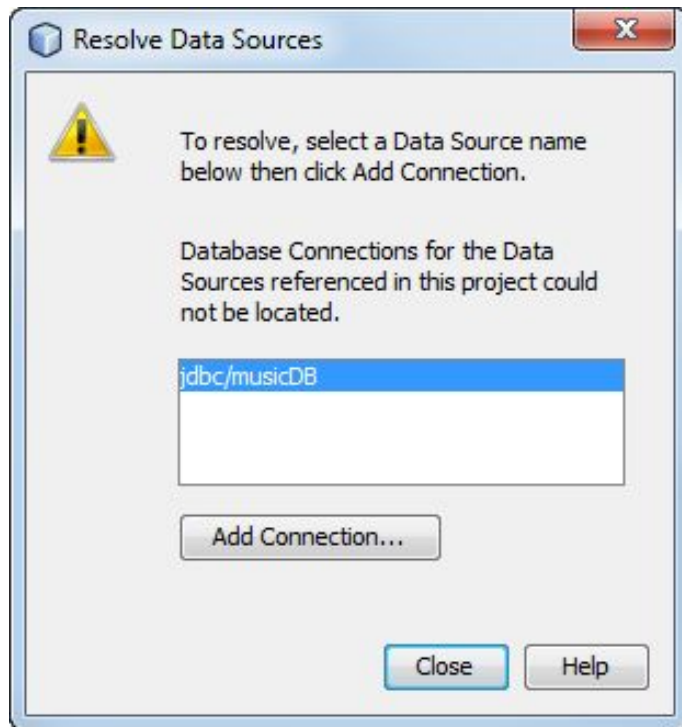
# The Add Library dialog box



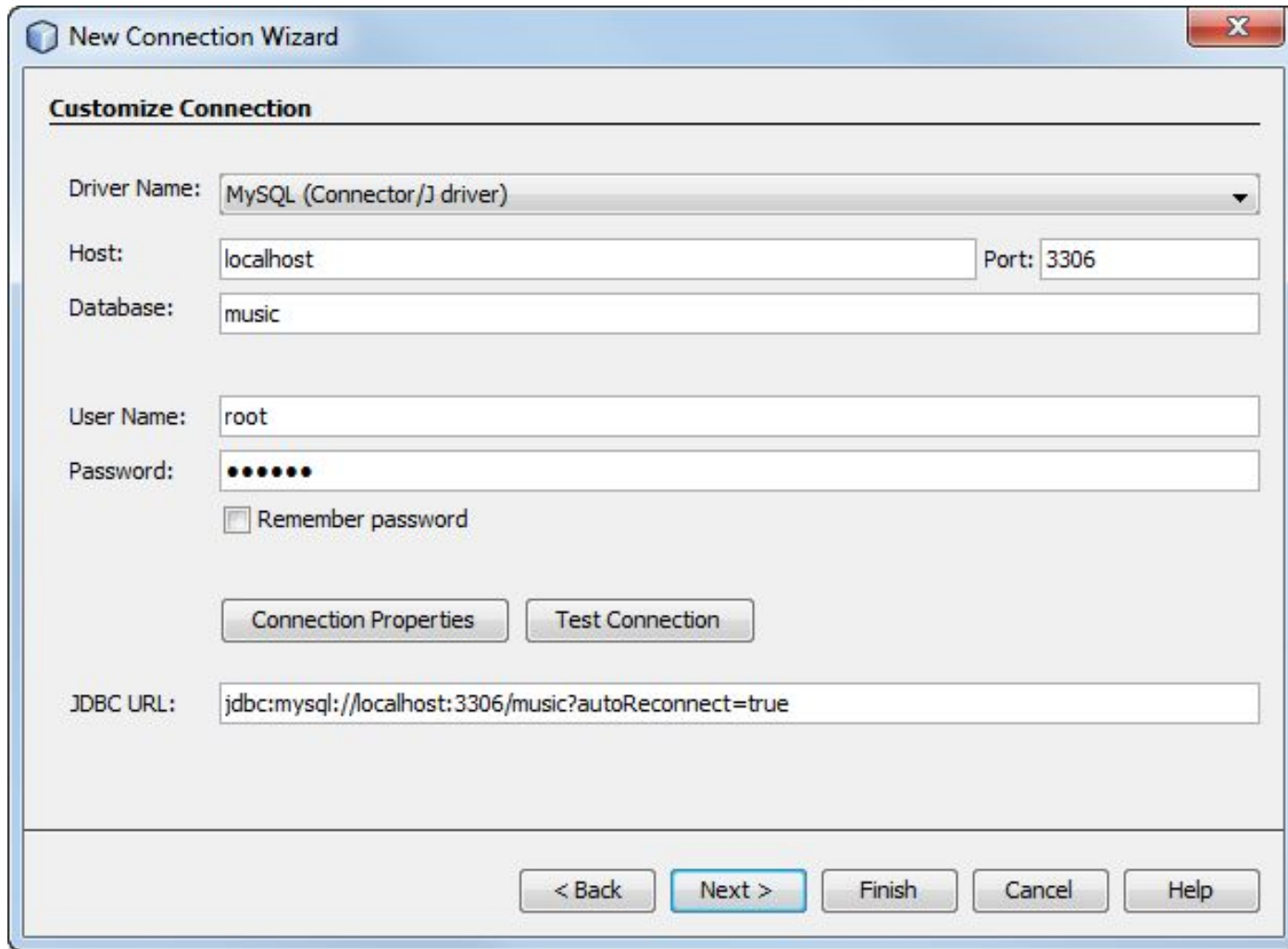
## How to work with libraries and JAR files

- To add a library file to the libraries for a project, right-click on the Libraries folder, select the Add Library command, and use the resulting dialog box to select the library. This may add one or more JAR files to the project.
- To add a JAR file to a project, right-click on the Libraries folder, select the Add JAR/Folder command and use the resulting dialog box to select the JAR file.

# How to resolve a database connection



# How to register the database connection



The screenshot shows the 'New Connection Wizard' dialog box, specifically the 'Customize Connection' step. The dialog has a title bar with a close button (X) in the top right corner. The main area contains several input fields and buttons. At the bottom, there are five buttons: '< Back', 'Next >', 'Finish', 'Cancel', and 'Help'. The 'Next >' button is highlighted with a blue border.

**New Connection Wizard**

**Customize Connection**

Driver Name: MySQL (Connector/J driver)

Host: localhost Port: 3306

Database: music

User Name: root

Password: ••••••

☐ Remember password

Connection Properties Test Connection

JDBC URL: jdbc:mysql://localhost:3306/music?autoReconnect=true

< Back Next > Finish Cancel Help



## How to register a database connection

1. Right-click on the project in the Project window and select the Resolve Data Source Problem command.
2. Select the data source and click the Add Connection button.
3. If necessary, change any of the entries for the connection. Then, click on the OK button to register the database connection.

## Terms

- The web.xml file is known as the *deployment descriptor (DD)*.
- After you enter the starting bracket for an HTML or JSP tag, the *code completion* feature provides a list of possible entries.