

```
1: <?xml version="1.0" encoding="UTF-8"?>
2:
3: <!-- =====
4: Buildfile for Project 3, version 7.0
5: Computer Science E-259
6:
7: This buildfile "shipped" in the root of the following hierarchy.
8:
9: project3-7.0/
10:   conf/
11:   src/
12:   cscie259/
13:     project3/
14:       wahoo/
15:   temp/
16:   webapps/
17:     ROOT/
18:       docs/
19:         cscie259/
20:           project3/
21:             wahoo/
22:   dtd/
23:   images/
24:   WEB-INF/
25:   xml/
26:     cache/
27:     xsl/
28:
29: To compile Wahoo, execute 'ant compile' or 'ant' from within
30: project3-7.0/.
31:
32: To generate Javadoc for your code (in project3-7.0/webapps/ROOT/docs/),
33: execute 'ant javadoc' from within project3-7.0/.
34:
35: To publish Javadoc for your code at
36: http://www.people.fas.harvard.edu/~username/cscie259/javadoc/project3-7.0/,
37: where username is your FAS username, execute 'ant publish-javadoc'
38: from within project3-7.0/.
39:
40: To delete your bytecodes as well as Tomcat's logs and runtime
41: directories, execute 'ant clean' from within project3-7.0/.
42: ===== -->
43:
44: <project name="project3" default="compile" basedir=". ">
45:
46:   <description>Project 3</description>
47:
48:   <!-- set global properties for this build -->
49:   <property name="build" location="webapps/ROOT/WEB-INF/classes"/>
50:   <property name="conf" location="conf"/>
51:   <property name="docs" location="webapps/ROOT/docs"/>
52:   <property name="logs" location="logs"/>
53:   <property name="src" location="src"/>
54:   <property name="temp" location="temp"/>
55:   <property name="work" location="work"/>
56:
57:   <!-- init -->
58:   <target name="init">
59:
60:     <!-- set the standard DSTAMP, TSTAMP, and TODAY properties -->
61:     <!-- according to the default formats -->
62:     <tstamp/>
```

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63:
64:     <!-- Create the build directory structure used by compile -->
65:     <mkdir dir="${build}"/>
66:
67:   </target>
68:
69:   <!-- compile -->
70:   <target name="compile"
71:     depends="init"
72:     description="compile cscie259.project3.wahoo.*">
73:     <javac srcdir="${src}"
74:       destdir="${build}"
75:       debug="true"
76:       fork="true"
77:       includes="cscie259/project3/wahoo/*"
78:       listfiles="true"/>
79:   </target>
80:
81:   <!-- javadoc -->
82:   <target name="javadoc"
83:     description="generate Javadoc">
84:     <delete includeemptydirs="true">
85:       <fileset dir="${docs}" includes="**/*"/>
86:     </delete>
87:     <javadoc packagenames="cscie259.project3.*"
88:       sourcepath="${src}"
89:       destdir="${docs}"
90:       author="true"
91:       version="true"
92:       private="true"
93:       nodeprecated="true"
94:       windowtitle="Project 3"
95:       header="Project 3"/>
96:   </target>
97:
98:   <!-- publish javadoc -->
99:   <target name="publish-javadoc"
100:     depends="javadoc"
101:     description="publish Javadoc">
102:     <copy todir="${user.home}/public_html/cscie259/javadoc/project3-7.0">
103:       <fileset dir="${docs}"/>
104:     </copy>
105:     <chmod parallel="false"
106:       perm="a+rX"
107:       dir="${user.home}/public_html/cscie259"
108:       includes="**/*"
109:       type="both"/>
110:   </target>
111:
112:   <!-- clean -->
113:   <target name="clean"
114:     description="remove class, log, temp, and work files">
115:     <delete dir="${build}"/>
116:     <delete dir="${conf}/Catalina"/>
117:     <delete dir="${logs}"/>
118:     <delete includeemptydirs="true">
119:       <fileset dir="${temp}" includes="**/*"/>
120:     </delete>
121:     <delete dir="${work}"/>
122:   </target>
123:
124: </project>
```

```
1: <!-- =====
2:   Configuration file for Project 3, version 7.0
3:   Computer Science E-259
4:
5:   Be sure to set the value of the Server element's port
6:   attribute to an integer between 1024 and 65535, inclusive.
7:   Of course, that port cannot already be in use. Nor can it
8:   be the same value you choose for the Connector element's port.
9:
10:  Also be sure to set the value of the Connector element's port
11:  attribute to an integer between 1024 and 65535, inclusive.
12:  Of course, that port cannot already be in use. Nor can it
13:  be the same value you choose for the Server element's port.
14: ===== -->
15:
16: <Server port="" shutdown="SHUTDOWN">
17:
18:   <Listener className="org.apache.catalina.core.JasperListener" />
19:
20:   <GlobalNamingResources>
21:     <Resource name="UserDatabase" auth="Container"
22:       type="org.apache.catalina.UserDatabase"
23:       description="User database that can be updated and saved"
24:       factory="org.apache.catalina.users.MemoryUserDatabaseFactory"
25:       pathname="conf/tomcat-users.xml" />
26:   </GlobalNamingResources>
27:
28:   <Service name="Catalina">
29:     <Connector port="" protocol="HTTP/1.1"
30:       maxThreads="150" connectionTimeout="20000" />
31:     <Engine name="Catalina" defaultHost="localhost">
32:       <Realm className="org.apache.catalina.realm.UserDatabaseRealm"
33:         resourceName="UserDatabase"/>
34:       <Host name="localhost" appBase="webapps"
35:         unpackWARs="true" autoDeploy="true"
36:         xmlValidation="false" xmlNamespaceAware="false">
37:         <Context path="" docBase="ROOT" debug="0" reloadable="true">
38:           <Manager pathname="" />
39:         </Context>
40:       </Host>
41:     </Engine>
42:   </Service>
43: </Server>
```

```

1: package cscie259.project3.wahoo;
2:
3: import java.io.IOException;
4: import java.io.PrintWriter;
5:
6: import javax.servlet.ServletException;
7:
8: import javax.servlet.http.HttpServletRequest;
9: import javax.servlet.http.HttpServletResponse;
10: import javax.servlet.http.HttpSession;
11:
12: import javax.xml.transform.dom.DOMSource;
13: import javax.xml.transform.Transformer;
14: import javax.xml.transform.TransformerException;
15: import javax.xml.transform.TransformerFactory;
16:
17: import javax.xml.transform.stream.StreamResult;
18: import javax.xml.transform.stream.StreamSource;
19:
20:
21: /**
22:  * This servlet logs the user into the Wahoo portal.
23:  * You MAY modify this file.
24:  *
25:  * @author Computer Science E-259
26:  * @version 7.0
27:  *
28:  * @author YOUR NAME GOES HERE
29:  */
30:
31:
32: public class Login extends WahooServlet
33: {
34:     /**
35:      * Presents user with login screen and processes login attempts
36:      * and account creations.
37:      *
38:      * @param request HTTP request object
39:      * @param response HTTP response object
40:      *
41:      * @throws IOException if a file-related error occurs
42:      * @throws ServletException if a servlet-related error occurs
43:      */
44:     protected void doWork(HttpServletRequest request,
45:                             HttpServletResponse response)
46:     throws IOException, ServletException
47:     {
48:         // check to see if a session already exists; if so, invalidate it
49:         HttpSession session = request.getSession(false);
50:         if (session != null)
51:         {
52:             // attempt to retrieve username from session
53:             String username = (String) session.getAttribute("username");
54:
55:             // if username is found, log user out (by invalidating session)
56:             if (username != null)
57:                 System.out.println("User " + username + " logged out");
58:             session.invalidate();
59:
60:             // display the login screen
61:             displayLoginForm(request, response, null);
62:

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63:         return;
64:     }
65:
66:     // process form submission, else display login screen
67:     String operation = request.getParameter("submit");
68:     if (operation != null &&
69:         (operation.equals("Log In") || operation.equals("Register")))
70:     {
71:         // retrieve username from HTTP request
72:         String username = request.getParameter("username");
73:
74:         // if username missing, display the login screen with an
75:         // informative error message
76:         if (username == null || username.equals(""))
77:         {
78:             displayLoginForm(request, response, "Please enter a username");
79:             return;
80:         }
81:
82:         // retrieve password from HTTP request
83:         String password = request.getParameter("password");
84:
85:         // if password missing, display the login screen with an
86:         // informative error message
87:         if (password == null || password.equals(""))
88:         {
89:             displayLoginForm(request, response, "Please enter a password");
90:             return;
91:         }
92:
93:         // retrieve User object with given username; if password incorrect,
94:         // display the login screen with an informative error message
95:         if (operation.equals("Log In"))
96:         {
97:             User user = UserManager.getUser(username);
98:             if (user == null || !user.getPassword().equals(password))
99:             {
100:                 displayLoginForm(request, response,
101:                                     "Invalid username or password");
102:                 return;
103:             }
104:         }
105:         else
106:         {
107:             // attempt create a new user, erring if desired username
108:             // username is already in use
109:             User user = UserManager.addUser(username, password);
110:             if (user == null)
111:             {
112:                 displayLoginForm(request, response,
113:                                     "Unable to add user " + username + ". " +
114:                                     "Please try a different username.");
115:                 return;
116:             }
117:
118:             // save the new user!
119:             UserManager.save();
120:         }
121:
122:         // report successful login
123:         System.out.println("User " + username + " logged in");
124:

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125:         // establish a new session and store the username in it
126:         session = request.getSession(true);
127:         session.setAttribute("username", username);
128:
129:         // redirect user to view servlet
130:         redirect(response, "/servlet/view");
131:
132:         return;
133:     }
134:
135:     // else display the login screen by default
136:     else
137:     {
138:         displayLoginForm(request, response, null);
139:     }
140: }
141:
142:
143: /**
144:  * Displays the login form, with an optional error string.
145:  *
146:  * @param request HTTP request object
147:  * @param response HTTP response object
148:  * @param error optional error string
149:  *
150:  * @throws IOException if an IO-related error occurs
151:  * @throws ServletException if a servlet-related error occurs
152:  */
153: public void displayLoginForm(HttpServletRequest request,
154:                             HttpServletResponse response,
155:                             String error)
156: throws IOException, ServletException
157: {
158:     // output text/html MIME type
159:     response.setContentType("text/html");
160:
161:     // retrieve PrintWriter
162:     PrintWriter out = response.getWriter();
163:
164:     // attempt to apply login.xml to an empty document
165:     try
166:     {
167:         // prepare to process login.xml by way of TrAX
168:         TransformerFactory tFactory = TransformerFactory.newInstance();
169:         StreamSource xslSource =
170:             new StreamSource(getServletContext().getRealPath("/xsl/login.xml"));
171:         Transformer transformer = tFactory.newTransformer(xslSource);
172:
173:         // if there's an error message waiting to be displayed,
174:         // pass it to login.xml as a stylesheet parameter
175:         if (error != null && !error.equals(""))
176:             transformer.setParameter("error", error);
177:
178:         // apply login.xml to an empty document by way of TrAX;
179:         // of course, a non-minimalist login screen might actually
180:         // make use of more interesting data (hint, hint)
181:         transformer.transform(new DOMSource(), new StreamResult(out));
182:     }
183:
184:     // catch any exceptions
185:     catch (TransformerException e)
186:     {
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187:         e.printStackTrace();
188:         throw new ServletException("Can't process login.xml: " +
189:                                     e.getMessage());
190:     }
191: }
192: }
```

```
1: package cscie259.project3.wahoo;
2:
3: import java.io.BufferedReader;
4: import java.io.IOException;
5: import java.io.InputStream;
6: import java.io.InputStreamReader;
7:
8:
9: /**
10:  * This class gets news headlines by connecting to Moreover.
11:  * You MAY modify this file.
12:  *
13:  *
14:  * @author Computer Science E-259
15:  * @version 7.0
16:  *
17:  * @author YOUR NAME GOES HERE
18:  */
19:
20: public final class NewsProvider
21: {
22:     /**
23:      * Default constructor is private so that this utility
24:      * class cannot be instantiated.
25:      */
26:     private NewsProvider() {}
27:
28:
29:     /**
30:      * Returns an XML representation of the headlines for a given
31:      * category.
32:      *
33:      * @param category category for which to fetch headlines
34:      *
35:      * @return XML representation of headlines for given category
36:      *
37:      * @throws IOException if an IO-related error occurs
38:      */
39:     public static String getHeadlines(String category)
40:     throws IOException
41:     {
42:         // retrieve newsfeed from Moreover, taking care to escape URL
43:         // to the application/x-www-form-urlencoded MIME format
44:         System.out.println("Getting category = " + category);
45:         String urlStr = "http://p.moreover.com/cgi-local/page?c=" +
46:             java.net.URLEncoder.encode(category, "UTF-8") +
47:             "&o=xml";
48:         java.net.URL url = new java.net.URL(urlStr);
49:         InputStream in = url.openStream();
50:         BufferedReader reader = new BufferedReader(new InputStreamReader(in));
51:         String line;
52:         String xmlStr = "";
53:         boolean start = false;
54:
55:         // iterate through retrieved XML in order to grab root element
56:         // and its descendants
57:         do
58:         {
59:             line = reader.readLine();
60:             if (line != null)
61:             {
62:                 // This is a trick to eliminate the <?xml?> declaration and
```

```
63:                 // the DOCTYPE declaration in order that this be a legal
64:                 // XML fragment that can be embedded into another document!
65:                 if (line.indexOf("<moreovernews>") != -1)
66:                     start = true;
67:                 if (start)
68:                     xmlStr += line + "\n";
69:             }
70:         }
71:         while (line != null);
72:
73:         // return root element and its descendants as a String
74:         return xmlStr;
75:     }
76: }
```

```

1: package cscie259.project3.wahoo;
2:
3: import java.io.BufferedReader;
4: import java.io.IOException;
5: import java.io.InputStream;
6: import java.io.InputStreamReader;
7:
8: import javax.servlet.ServletContext;
9: import javax.servlet.ServletException;
10:
11: import javax.servlet.http.HttpServlet;
12: import javax.servlet.http.HttpServletRequest;
13: import javax.servlet.http.HttpServletResponse;
14:
15:
16: /**
17:  * This servlet displays personalized preferences in the Wahoo portal.
18:  *
19:  * You MUST modify this file.
20:  *
21:  * @author Computer Science E-259
22:  * @version 7.0
23:  *
24:  * @author YOUR NAME GOES HERE
25:  */
26:
27: public class Prefs extends WahooServlet
28: {
29:     /**
30:      * a cached copy of the categories XML file
31:      */
32:     private String categoriesXML_ = "";
33:
34:
35:     /**
36:      * Called automatically by servlet container; initializes the servlet
37:      * and the categories list.
38:      *
39:      * @throws ServletException if a servlet-related error occurs
40:      */
41:     public void init()
42:     throws ServletException
43:     {
44:         // ensure UserManager is instantiated
45:         super.init();
46:
47:         // try to read categories into memory
48:         try
49:         {
50:             // grab categories from cached file
51:             ServletContext context = getServletContext();
52:             InputStream in
53:                 = context.getResourceAsStream("/xml/cache/nested_category_list.xml");
54:             BufferedReader reader =
55:                 new BufferedReader(new InputStreamReader(in));
56:             String line;
57:             boolean start = false;
58:
59:             // iterate through XML in order to grab root element
60:             // and its descendants
61:             do
62:             {

```

```

63:                 line = reader.readLine();
64:                 if (line != null)
65:                 {
66:                     // This is a trick to eliminate the <?xml?> declaration and
67:                     // the DOCTYPE declaration in order that this be a legal
68:                     // XML fragment that can be embedded into another document!
69:                     if (line.indexOf("<nested_category_list>") != -1)
70:                         start = true;
71:                     if (start)
72:                         categoriesXML_ += line + "\n";
73:                 }
74:             }
75:             while (line != null);
76:         }
77:
78:         // catch any error
79:         catch (IOException e)
80:         {
81:             throw new ServletException("Can't read categories: " +
82:                 e.getMessage());
83:         }
84:     }
85:
86:
87:     /**
88:      * Displays and processes the preferences form; if user attempts to execute
89:      * this servlet before user's authenticated (via the login
90:      * servlet), should redirect user to login servlet.
91:      *
92:      * @param request HTTP request object
93:      * @param response HTTP response object
94:      *
95:      * @throws IOException if an IO-related error occurs
96:      * @throws ServletException if a servlet-related error occurs
97:      */
98:     public void doWork(HttpServletRequest request,
99:         HttpServletResponse response)
100:     throws IOException, ServletException
101:     {
102:         // TODO
103:     }
104: }

```

```
1: package cscie259.project3.wahoo;
2:
3: import java.util.LinkedList;
4: import java.util.List;
5:
6:
7: /**
8:  * This class represents a single user of the Wahoo portal.
9:  *
10:  * You MAY modify this file.
11:  *
12:  * @author Computer Science E-259
13:  * @version 7.0
14:  *
15:  * @author YOUR NAME GOES HERE
16:  */
17:
18: public class User
19: {
20:     /**
21:      * user's username
22:      */
23:     private String username_;
24:
25:
26:     /**
27:      * user's password
28:      */
29:     private String password_;
30:
31:
32:     /**
33:      * user's list of preferred categories
34:      */
35:     private List<String> newsCategories_ = new LinkedList<String>();
36:
37:
38:     /**
39:      * Creates a new User object, recording user's name and a password.
40:      *
41:      * @param username new user's username
42:      * @param password new user's password
43:      */
44:     public User(String username, String password)
45:     {
46:         username_ = username;
47:         password_ = password;
48:     }
49:
50:
51:     /**
52:      * Add a news category to the preferred list, if it not already in the
53:      * list.
54:      *
55:      * @param cat category to be added to user's preferred categories
56:      */
57:     public void addNewsCategory(String cat)
58:     {
59:         if (!newsCategories_.contains(cat))
60:             newsCategories_.add(cat);
61:     }
62:
```

```
63:
64:     /**
65:      * Get the user's preferred news categories.
66:      *
67:      * @return list of user's preferred news categories
68:      */
69:     public List getNewsCategories()
70:     {
71:         return newsCategories_;
72:     }
73:
74:
75:     /**
76:      * Get the password for this user.
77:      *
78:      * @return user's password
79:      */
80:     public String getPassword()
81:     {
82:         return password_;
83:     }
84:
85:
86:     /**
87:      * Get the username for this user.
88:      *
89:      * @return user's username
90:      */
91:     public String getUserName()
92:     {
93:         return username_;
94:     }
95:
96:
97:     /**
98:      * Removes a news category to the preferred list if it is on the list.
99:      *
100:      * @param cat category to be removed from user's preferred categories
101:      */
102:     public void removeNewsCategory(String cat)
103:     {
104:         newsCategories_.remove(cat);
105:     }
106:
107:
108:     /**
109:      * Saves the user's preferred news categories, overwriting previous
110:      * settings.
111:      *
112:      * @param newsCategories list of user's preferred news categories
113:      */
114:     public void setNewsCategories(List<String> newsCategories)
115:     {
116:         newsCategories_ = newsCategories;
117:     }
118: }
```

```

1: package cscie259.project3.wahoo;
2:
3: import java.io.FileNotFoundException;
4: import java.io.FileOutputStream;
5:
6: import java.util.HashMap;
7:
8: import java.io.IOException;
9: import java.io.InputStream;
10:
11: import java.util.Iterator;
12: import java.util.Map;
13: import java.util.Properties;
14:
15: import javax.servlet.ServletContext;
16:
17: import javax.xml.parsers.SAXParser;
18: import javax.xml.parsers.SAXParserFactory;
19:
20: import javax.xml.transform.OutputKeys;
21:
22: import org.apache.xml.serializer.Serializer;
23: import org.apache.xml.serializer.SerializerFactory;
24:
25: import org.xml.sax.Attributes;
26: import org.xml.sax.ContentHandler;
27: import org.xml.sax.InputSource;
28: import org.xml.sax.SAXException;
29:
30: import org.xml.sax.helpers.AttributesImpl;
31: import org.xml.sax.helpers.DefaultHandler;
32:
33:
34: /**
35:  * This class keeps track of users of the Wahoo portal by writing out
36:  * information to an xml file.
37:  *
38:  * You MAY modify this file.
39:  *
40:  * @author Computer Science E-259
41:  * @version 7.0
42:  *
43:  * @author YOUR NAME GOES HERE
44:  */
45:
46: public final class UserManager
47: {
48:     /**
49:      * a reference to the one and only instance of this class
50:      */
51:     private static UserManager instance_;
52:
53:     /**
54:      * a reference to the servlet context
55:      */
56:     private ServletContext context_;
57:
58:
59:     /**
60:      * a hash table of all users
61:      */

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63:     private Map<String, User> users_ = new HashMap<String, User>();
64:
65:     /**
66:      * A constructor that reads the user DB from an input stream.
67:      */
68:     private UserManager(ServletContext context)
69:     {
70:         context_ = context;
71:         readUsers(context_.getResourceAsStream("/xml/users.xml"));
72:     }
73:
74:
75:     /**
76:      * Must be called (e.g., by Login's init() method) once before
77:      * using any other method in class.
78:      *
79:      * @param context servlet's context object
80:      */
81:     public static synchronized void init(ServletContext context)
82:     {
83:         if (instance_ == null)
84:             instance_ = new UserManager(context);
85:     }
86:
87:
88:     /**
89:      * Adds a new user using the given username and password.
90:      * Returns the new User object if the operation succeeded or null if the
91:      * user could not be added because the username was already taken.
92:      *
93:      * @param username user's username
94:      * @param password user's password
95:      *
96:      * @return User object belonging to given username and password
97:      */
98:     public static synchronized User addUser(String username, String password)
99:     {
100:         return instance().addUserImpl(username, password);
101:     }
102:
103:
104:     /**
105:      * Adds a new user using the supplied username and password.
106:      * Returns the new User object if the operation succeeded or null if the
107:      * user could not be added because the username was already taken.
108:      *
109:      * @param username user's username
110:      * @param password user's password
111:      *
112:      * @return User object belonging to given username and password
113:      */
114:     private User addUserImpl(String username, String password)
115:     {
116:         // check to see if user already exists, returning immediately if so
117:         if (getUserImpl(username) != null)
118:             return null;
119:
120:         // add user to in-memory database
121:         System.out.print("Adding \"" + username + "\" to main memory with " +
122:             "password \"" + password + "\"...\n");
123:         User user = new User(username, password);
124:

```



```

125:     users_.put(username, user);
126:     System.out.println("Done.");
127:
128:     return user;
129: }
130:
131:
132: /**
133:  * Returns a User object for given username or null if one is not found.
134:  *
135:  * @param username user's username
136:  *
137:  * @return User object belonging to given username
138:  */
139: public static synchronized User getUser(String username)
140: {
141:     return instance().getUserImpl(username);
142: }
143:
144:
145: /**
146:  * Returns a User object for given username or null if one is not found.
147:  *
148:  * @param username user's username
149:  *
150:  * @return User object belonging to given username
151:  */
152: private User getUserImpl(String username)
153: {
154:     return (User)users_.get(username);
155: }
156:
157:
158: /**
159:  * Returns the one and only instance of this class, throwing an exception
160:  * if it has not been initialized.
161:  */
162: private static UserManager instance()
163: {
164:     if (instance_ == null)
165:         throw new RuntimeException("UserManager must be initialized " +
166:                                     "before use");
167:     return instance_;
168: }
169:
170:
171: /**
172:  * Read the user info from the input stream.
173:  *
174:  * @param in input stream
175:  */
176: private void readUsers(InputStream in)
177: {
178:     // try to parse users.xml, using internal UserReader class
179:     // as a ContentHandler, catching any errors
180:     try
181:     {
182:         SAXParserFactory factory = SAXParserFactory.newInstance();
183:         SAXParser parser = factory.newSAXParser();
184:         parser.parse(new InputSource(in), new UserReader());
185:     }
186:     catch (IOException e)

```

```

187:     {
188:         throw new RuntimeException("Error accessing user config file : " +
189:                                     e.getMessage());
190:     }
191:     catch (SAXException e)
192:     {
193:         throw new RuntimeException("Error parsing user config file: " +
194:                                     e.getMessage());
195:     }
196:     catch (Exception e)
197:     {
198:         e.printStackTrace();
199:     }
200: }
201:
202:
203: /**
204:  * Saves the information about all users to the information database
205:  * (stored as a file). Call this methods whenever you have made changed
206:  * to User objects you would like to save. If you do not call this method,
207:  * your changes will be lost next time you start up the server.
208:  */
209: public static synchronized void save()
210: {
211:     instance().writeUsers();
212: }
213:
214:
215: /**
216:  * Writes users info to the config file, overwriting old contents.
217:  */
218: private void writeUsers()
219: {
220:     // try to write out users
221:     try
222:     {
223:         // prepare to pretty-print (manually)
224:         char [] LF = new char[1];
225:         char [] TAB = new char[1];
226:         LF[0] = '\n';
227:         TAB[0] = '\t';
228:         String path = context_.getRealPath("/xml/users.xml");
229:         System.out.println("Writing user info to : " + path);
230:         FileOutputStream fos = new FileOutputStream(path);
231:         Properties format = new Properties();
232:         format.put(OutputKeys.ENCODING, "UTF-8");
233:         format.put(OutputKeys.INDENT, "no");
234:         format.put(OutputKeys.METHOD, "xml");
235:         Serializer serializer = SerializerFactory.getSerializer(format);
236:         serializer.setOutputStream(fos);
237:         ContentHandler handler = serializer.asContentHandler();
238:
239:         // start outputting
240:         handler.startDocument();
241:         AttributesImpl attributes = new AttributesImpl();
242:         handler.startElement(null, null, "users", attributes);
243:         handler.characters(LF, 0, 1);
244:
245:         // iterate over the users and write them out
246:         Iterator iter = users_.keySet().iterator();
247:         while (iter.hasNext())
248:         {

```

```

249:         String username = (String)iter.next();
250:         User user = (User)users_.get(username);
251:         AttributesImpl atts = new AttributesImpl();
252:         atts.addAttribute(null, null, "name", null,
253:             user.getUserName());
254:         atts.addAttribute(null, null, "password", null,
255:             user.getPassword());
256:         handler.characters(TAB, 0, 1);
257:         handler.startElement(null, null, "user", atts);
258:         handler.characters(LF, 0, 1);
259:
260:         // iterate over the user's news categories and write them out
261:         atts = new AttributesImpl();
262:         handler.characters(TAB, 0, 1);
263:         handler.characters(TAB, 0, 1);
264:         handler.startElement(null, null, "news-categories", atts);
265:         handler.characters(LF, 0, 1);
266:         Iterator cats = user.getNewsCategories().iterator();
267:         while (cats.hasNext())
268:         {
269:             String cat = (String)cats.next();
270:             AttributesImpl atts2 = new AttributesImpl();
271:             atts2.addAttribute(null, null, "name", null, cat);
272:             handler.characters(TAB, 0, 1);
273:             handler.characters(TAB, 0, 1);
274:             handler.characters(TAB, 0, 1);
275:             handler.startElement(null, null, "category", atts2);
276:             handler.endElement(null, null, "category");
277:             handler.characters(LF, 0, 1);
278:         }
279:         handler.characters(TAB, 0, 1);
280:         handler.characters(TAB, 0, 1);
281:         handler.endElement(null, null, "news-categories");
282:         handler.characters(LF, 0, 1);
283:         handler.characters(TAB, 0, 1);
284:         handler.endElement(null, null, "user");
285:         handler.characters(LF, 0, 1);
286:     }
287:
288:     // stop outputting
289:     handler.endElement(null, null, "users");
290:     handler.characters(LF, 0, 1);
291:     handler.endDocument();
292: }
293:
294: // catch any errors
295: catch (FileNotFoundException e)
296: {
297:     throw new RuntimeException("Can't open file for writing:: " +
298:         e.getMessage());
299: }
300: catch (IOException e)
301: {
302:     throw new RuntimeException("Can't open file for writing:: " +
303:         e.getMessage());
304: }
305: catch (SAXException e)
306: {
307:     throw new RuntimeException("Can't write out users: " +
308:         e.getMessage());
309: }
310: }

```

```

311:
312:
313: /**
314:  * An inner class which is the SAX2 handler used to read the user
315:  * XML file into Java objects.
316:  */
317: private class UserReader extends DefaultHandler
318: {
319:     // reference to user being parsed
320:     private User curUser_;
321:
322:
323:     /**
324:      * SAX handler for elements
325:      *
326:      * @param namespaceURI element's namespace (unused)
327:      * @param localName element's local name (unused)
328:      * @param qName element's name
329:      * @param atts element's attributes
330:      *
331:      * @throws SAXException
332:      */
333:     public void startElement(String namespaceURI,
334:         String localName,
335:         String qName,
336:         Attributes atts)
337:         throws SAXException
338:     {
339:         // process user elements
340:         if (qName.equals("user"))
341:         {
342:             String username = atts.getValue("name");
343:             if (username == null || username.equals(""))
344:                 throw new SAXException("user element must have a " +
345:                     "name attribute");
346:             String password = atts.getValue("password");
347:             if (password == null || password.equals(""))
348:                 throw new SAXException("user element must have a " +
349:                     "password attribute");
350:             curUser_ = addUserImpl(username, password);
351:             if (curUser_ == null)
352:                 throw new SAXException("Can't add user: " +
353:                     "username " + username + " " +
354:                     "is already taken");
355:         }
356:
357:         // process category elements
358:         else if (qName.equals("category"))
359:         {
360:             String name = atts.getValue("name");
361:             if (name == null || name.equals(""))
362:                 throw new SAXException("category element must have a " +
363:                     "name attribute");
364:             System.out.print("Associating \" + name +
365:                 "\" with \"" + curUser_.getUserName() +
366:                 "\"... ");
367:             curUser_.addNewsCategory(name);
368:             System.out.println("Done.");
369:         }
370:     }
371: }
372: }

```

```
1: package cscie259.project3.wahoo;
2:
3: import java.io.IOException;
4:
5: import javax.servlet.ServletException;
6:
7: import javax.servlet.http.HttpServletRequest;
8: import javax.servlet.http.HttpServletResponse;
9:
10:
11: /**
12:  * This servlet displays the main personalized view in the Wahoo portal.
13:  *
14:  * You MUST modify this file.
15:  *
16:  * @author Computer Science E-259
17:  * @version 7.0
18:  *
19:  * @author YOUR NAME GOES HERE
20:  */
21:
22: public class View extends WahooServlet
23: {
24:     /**
25:      * Displays the current user's main view; if user attempts to execute
26:      * this servlet before user's authenticated (via the login
27:      * servlet), should redirect user to login servlet.
28:      *
29:      * @param request HTTP request object
30:      * @param response HTTP response object
31:      *
32:      * @throws IOException if an IO-related error occurs
33:      * @throws ServletException if a servlet-related error occurs
34:      */
35:     public void doWork(HttpServletRequest request,
36:                        HttpServletResponse response)
37:         throws IOException, ServletException
38:     {
39:         // TODO
40:     }
41: }
```

```
1: package cscie259.project3.wahoo;
2:
3: import java.io.IOException;
4:
5: import javax.servlet.http.HttpServlet;
6: import javax.servlet.http.HttpServletRequest;
7: import javax.servlet.http.HttpServletResponse;
8:
9: import javax.servlet.RequestDispatcher;
10: import javax.servlet.ServletException;
11:
12: /**
13:  * Base class for Wahoo's servlets.
14:  *
15:  * You MAY modify this file.
16:  *
17:  * @author Computer Science E-259
18:  * @version 7.0
19:  *
20:  * @author YOUR NAME GOES HERE
21:  */
22:
23:
24: public abstract class WahooServlet extends HttpServlet
25: {
26:     /**
27:      * Common initialization tasks for this group of servlets.
28:      *
29:      * Initializes the UserManager instance.
30:      *
31:      * @throws ServletException if a servlet-related error occurs
32:      */
33:     public void init()
34:     throws ServletException
35:     {
36:         UserManager.init(getServletContext());
37:     }
38:
39:     /**
40:      * Responds to GETs in the same manner as POSTs.
41:      *
42:      * @param request HTTP request object
43:      * @param response HTTP response object
44:      *
45:      * @throws IOException if an IO-related error occurs
46:      * @throws ServletException if a servlet-related error occurs
47:      */
48:     public void doGet(HttpServletRequest request,
49:                        HttpServletResponse response)
50:     throws IOException, ServletException
51:     {
52:         doWork(request, response);
53:     }
54:
55:
56:     /**
57:      * Responds to POSTs in the same manner as GETs.
58:      *
59:      * @param request HTTP request object
60:      * @param response HTTP response object
61:      *
62:      * @throws IOException if an IO-related error occurs
```

```
63:      * @throws ServletException if a servlet-related error occurs
64:      */
65:     public void doPost(HttpServletRequest request,
66:                        HttpServletResponse response)
67:     throws IOException, ServletException
68:     {
69:         doWork(request, response);
70:     }
71:
72:
73:     /**
74:      * To be implemented by descendants, handles GETs and POSTs identically.
75:      *
76:      * @param request HTTP request object
77:      * @param response HTTP response object
78:      *
79:      * @throws IOException if an IO-related error occurs
80:      * @throws ServletException if a servlet-related error occurs
81:      */
82:     protected abstract void doWork(HttpServletRequest request,
83:                                     HttpServletResponse response)
84:     throws IOException, ServletException;
85:
86:
87:     /**
88:      * Used to forward the request and response objects to another servlet
89:      * (whose path is of the form "/servlet/foo") for processing.
90:      *
91:      * @param request HTTP request object
92:      * @param response HTTP response object
93:      * @param path the path to the servlet being forwarded to
94:      *
95:      * @throws IOException if an IO-related error occurs
96:      * @throws ServletException if a servlet-related error occurs
97:      */
98:     public void forward(HttpServletRequest request,
99:                        HttpServletResponse response,
100:                        String path)
101:     throws IOException, ServletException
102:     {
103:         RequestDispatcher dispatch =
104:             request.getRequestDispatcher(path);
105:         dispatch.forward(request, response);
106:     }
107:
108:
109:     /**
110:      * Used to redirect the user to another url (or servlet in the
111:      * same container), without preserving the current
112:      * HttpServletRequest object.
113:      *
114:      * @param response HTTP response object
115:      * @param url the url to which the user's being redirected
116:      *
117:      * @throws IOException if an IO-related error occurs
118:      */
119:     public void redirect(HttpServletResponse response, String url)
120:     throws IOException
121:     {
122:         response.sendRedirect(url);
123:     }
124: }
```

```
1: <!ELEMENT moreovernews (article*)>
2: <!ELEMENT article (url,headline_text,source,media_type,cluster,tagline,document_ur
1,harvest_time,access_registration,access_status)>
3: <!ATTLIST article id ID #IMPLIED>
4: <!ELEMENT url (#PCDATA)>
5: <!ELEMENT headline_text (#PCDATA)>
6: <!ELEMENT source (#PCDATA)>
7: <!ELEMENT media_type (#PCDATA)>
8: <!ELEMENT cluster (#PCDATA)>
9: <!ELEMENT tagline (#PCDATA)>
10: <!ELEMENT document_url (#PCDATA)>
11: <!ELEMENT harvest_time (#PCDATA)>
12: <!ELEMENT access_registration (#PCDATA)>
13: <!ELEMENT access_status (#PCDATA)>
```

```
1: <!ELEMENT nested_category_list (channel*)>
2: <!ELEMENT channel (channel_name, category*)>
3: <!ELEMENT channel_name (#PCDATA)>
4: <!ELEMENT category (category_name, feed_name)>
5: <!ELEMENT category_name (#PCDATA)>
6: <!ELEMENT feed_name (#PCDATA)>
```

```
1: <!-- redirects user to Login servlet by default -->
2:
3: <% response.sendRedirect("/servlet/login"); %>
```

```
1: <?xml version="1.0" encoding="ISO-8859-1"?>
2:
3: <!-- =====
4:      Configuration file for Project 3, version 7.0
5:      Computer Science E-259
6:      ===== -->
7:
8: <web-app xmlns="http://java.sun.com/xml/ns/j2ee"
9:      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
10:      xsi:schemaLocation="http://java.sun.com/xml/ns/j2ee http://java.sun.com/xml/ns
/j2ee/web-app_2_5.xsd"
11:      version="2.5">
12:
13:     <!-- servlets -->
14:     <servlet>
15:         <servlet-name>login</servlet-name>
16:         <servlet-class>cscie259.project3.wahoo.Login</servlet-class>
17:     </servlet>
18:     <servlet>
19:         <servlet-name>view</servlet-name>
20:         <servlet-class>cscie259.project3.wahoo.View</servlet-class>
21:     </servlet>
22:     <servlet>
23:         <servlet-name>prefs</servlet-name>
24:         <servlet-class>cscie259.project3.wahoo.Prefs</servlet-class>
25:     </servlet>
26:
27:     <!-- servlets' mappings -->
28:     <servlet-mapping>
29:         <servlet-name>login</servlet-name>
30:         <url-pattern>/servlet/login</url-pattern>
31:     </servlet-mapping>
32:     <servlet-mapping>
33:         <servlet-name>view</servlet-name>
34:         <url-pattern>/servlet/view</url-pattern>
35:     </servlet-mapping>
36:     <servlet-mapping>
37:         <servlet-name>prefs</servlet-name>
38:         <url-pattern>/servlet/prefs</url-pattern>
39:     </servlet-mapping>
40:
41: </web-app>
```



```
1: <?xml version="1.0" encoding="UTF-8"?>
2: <dummy/>
```

```
1: <?xml version="1.0" encoding="UTF-8"?>
2: <users>
3:     <user name="jharvard" password="crimson">
4:         <news-categories>
5:             <category name="Boston news"/>
6:             <category name="Top stories"/>
7:             <category name="Top technology stories"/>
8:         </news-categories>
9:     </user>
10: </users>
```

```
1: <?xml version="1.0" encoding="UTF-8"?>
2:
3: <!-- XSLT stylesheet for Wahoo!'s login page -->
4: <xsl:stylesheet exclude-result-prefixes="xalan" version="1.0" xmlns="http://www.w3
.org/1999/xhtml" xmlns:xalan="http://xml.apache.org/xslt" xmlns:xsl="http://www.w3.org/19
99/XSL/Transform">
5:
6:   <!-- an optional error string -->
7:   <xsl:param name="error" select="''"/>
8:
9:   <!-- output pretty-printed results as XHTML 1.0 -->
10:  <xsl:output doctype-public="-//W3C//DTD XHTML 1.0 Transitional//EN" doctype-syst
em="http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd" encoding="UTF-8" indent="yes
" method="xml" xalan:indent-amount="4"/>
11:
12:  <xsl:template match="/">
13:    <html xml:lang="en" lang="en">
14:      <head>
15:        <title>Wahoo!</title>
16:      </head>
17:      <body onLoad="document.form.username.focus()">
18:        <center>
19:          
20:          <p/>
21:          <form action="/servlet/login" method="post" name="form">
22:            <table>
23:              <tr>
24:                <td width="40%">
25:                  <strong>Login:</strong>
26:                </td>
27:                <td width="60%">
28:                  <input type="text" name="username" value="" size="19" />
29:                </td>
30:              </tr>
31:              <tr>
32:                <td>
33:                  <strong>Password:</strong>
34:                </td>
35:                <td>
36:                  <input type="password" name="password" value="" size="19" />
37:                </td>
38:              </tr>
39:              <xsl:if test="$error">
40:                <tr>
41:                  <td colspan="2" align="center">
42:                    <strong style="color:red">
43:                      <xsl:value-of select="$error"/>
44:                    </strong>
45:                  </td>
46:                </tr>
47:              </xsl:if>
48:              <tr>
49:                <td colspan="2" align="center">
50:                  <input name="submit" type="submit" value="Log In" /> <input name
="submit" type="submit" value="Register" />
51:                </td>
52:              </tr>
53:            </table>
54:          </form>
55:        </center>
56:      </body>
57:    </html>
```

```
58:   </xsl:template>
59: </xsl:stylesheet>
```

```
1: <?xml version="1.0" encoding="UTF-8"?>
2:
3: <!-- XSLT stylesheet for Wahoo!'s preferences page -->
4: <xsl:stylesheet version="1.0" xmlns:xalan="http://xml.apache.org/xslt" xmlns:xsl="
http://www.w3.org/1999/XSL/Transform">
5:
6:   <!-- output pretty-printed results as XHTML 1.0 -->
7:   <xsl:output doctype-public="-//W3C//DTD XHTML 1.0 Transitional//EN" doctype-syst
em="http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd" encoding="UTF-8" indent="yes
" method="xml" xalan:indent-amount="4"/>
8:
9:   <xsl:template match="/">
10:     <html xml:lang="en" lang="en">
11:       <head>
12:         <title>Wahoo!</title>
13:       </head>
14:       <body>
15:         <div align="center">
16:
17:           <!-- Wahoo!'s logo -->
18:           
19:           <br /><br />
20:
21:           <!-- TODO -->
22:
23:         </div>
24:       </body>
25:     </html>
26:   </xsl:template>
27:
28: </xsl:stylesheet>
```

```
1: <?xml version="1.0" encoding="UTF-8"?>
2:
3: <!-- XSLT stylesheet for Wahoo!'s main page -->
4: <xsl:stylesheet version="1.0" xmlns:xalan="http://xml.apache.org/xslt" xmlns:xsl="
http://www.w3.org/1999/XSL/Transform">
5:
6:   <!-- output pretty-printed results as XHTML 1.0 -->
7:   <xsl:output doctype-public="-//W3C//DTD XHTML 1.0 Transitional//EN" doctype-syst
em="http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd" encoding="UTF-8" indent="yes
" method="xml" xalan:indent-amount="4"/>
8:
9:   <xsl:template match="/">
10:     <html xml:lang="en" lang="en">
11:       <head>
12:         <title>Wahoo!</title>
13:       </head>
14:       <body>
15:         <div align="center">
16:
17:           <!-- Wahoo!'s logo -->
18:           
19:           <br /><br />
20:
21:           <!-- TODO -->
22:
23:         </div>
24:       </body>
25:     </html>
26:   </xsl:template>
27:
28: </xsl:stylesheet>
```