

CREATE A COOKIE

You can create a cookie with your JSP page. When a user views the page, the cookie is stored as a small text file on the user's computer. Cookies are often used to personalize a JSP page. For example, a cookie can store a user's name. The next time the user accesses the JSP page, the page can use the value stored in the cookie to display the user's name.

A cookie consists of a key, which indicates the name of the cookie, and a value, which is the information stored in the cookie. To create a cookie, you must create a `Cookie` object and then assign the key and value of the cookie to the object.

You should also specify when the cookie will expire. By default, a cookie will be deleted when the user closes their Web browser. Setting an expiry time for a cookie allows the cookie to store information for longer periods of time. The `setMaxAge` method of the `Cookie` object is used to set the expiry time, in seconds, for a cookie.

The `setPath` method of the `Cookie` object allows you to specify a path for the cookie. Only the pages stored in the specified directory will be able to read the cookie.

When all of the cookie information has been set, the `addCookie` method of the `response` object is used to send the cookie information to a user's computer.

The scriptlet containing the code that creates the cookie should be placed before any other code on the JSP page. If HTML code is sent before the scriptlet, an error may occur.

After creating a cookie, you can have a JSP page read the cookie. For information about reading a cookie, see page 116.

Extra

Although some people consider cookies to be a security risk, there has never been a report of a virus being transmitted by creating or reading a cookie. Cookies are text files, so unlike executable programs, they do not transmit viruses.

You can create many cookies to store information about a user, but keep in mind that Web browsers limit the number of cookies a Web site can store on a user's computer. Most Web browsers allow each domain to store a maximum of 20 cookies. Cookies created by your Web site should not exceed 4 KB in size.

The `setDomain` method of the `Cookie` object lets you specify the domain name that the cookies you create belong to. When used with the `setPath` method, the `setDomain` method increases the security of cookies you create by preventing unauthorized JSP pages from accessing the cookies.

Example:

```
myCookie.setDomain("www.abccorp.com");
myCookie.setPath("/jsppages");
```

CREATE A COOKIE

```
Untitled - Notepad
File Edit Search Help
<%
Cookie firstCookie = new Cookie("UserName", "Tom");
%>
<html>
<head>
<title>Create a Cookie</title>
</head>
<body>
A cookie has been set.
</body>
</html>
```

- 1 To create a cookie, type `Cookie` followed by the name of the `Cookie` object you want to create.
- 2 Type `= new Cookie()`.

- 3 Between the parentheses, type the name for the cookie enclosed in quotation marks.
- 4 Type a comma followed by the value you want to assign to the cookie enclosed in quotation marks.

```
Untitled - Notepad
File Edit Search Help
<%
Cookie firstCookie = new Cookie("UserName", "Tom");
firstCookie.setMaxAge(3600);
%>
<html>
<head>
<title>Create a Cookie</title>
</head>
<body>
A cookie has been set.
</body>
</html>
```

- 5 To specify when the cookie will expire, type the name of the `Cookie` object followed by a dot.
- 6 Type `setMaxAge()`.

- 7 Between the parentheses, specify when the cookie will expire, in seconds.

```
Untitled - Notepad
File Edit Search Help
<%
Cookie firstCookie = new Cookie("UserName", "Tom");
firstCookie.setMaxAge(3600);
firstCookie.setPath("/examples");
%>
<html>
<head>
<title>Create a Cookie</title>
</head>
<body>
A cookie has been set.
</body>
</html>
```

- 8 To specify the location of the pages that can access the cookie, type the name of the `Cookie` object followed by a dot.
- 9 Type `setPath()`.

- 10 Between the parentheses, type the relative path of the JSP pages enclosed in quotation marks.

```
Untitled - Notepad
File Edit Search Help
<%
Cookie firstCookie = new Cookie("UserName", "Tom");
firstCookie.setMaxAge(3600);
firstCookie.setPath("/examples");
response.addCookie(firstCookie);
%>
<html>
<head>
<title>Create a Cookie</title>
</head>
<body>
A cookie has been set.
</body>
</html>
```

- 11 To send the cookie to a user's computer, type `response.addCookie()`.
- 12 Between the parentheses, type the name of the `Cookie` object.

- 13 Save the page with the `.jsp` extension.
 - When a user accesses the JSP page, the cookie will be stored on the user's computer. To read the cookie information, see page 116.

READ A COOKIE

A JSP page can read a cookie stored on a user's computer. Reading a cookie allows the page to access the information in the cookie, such as the user's name or location.

When a user visits a JSP page that sets a cookie, the cookie is stored as a small text file on the user's computer. The location where a cookie is stored depends on the type of Web browser being used.

The `getCookies` method of the `request` object is used to read all the cookies that can be accessed by your JSP page. You can create an array to store all the cookie information retrieved from a user's computer and then access the specific cookie information you want.

The array element with an index number of 0 contains the information for the first cookie stored on a user's computer. If the server has session tracking enabled, the first cookie

in the array may contain information about the session ID. You may need to access the next array element to read the other cookie values. For information about reading multiple cookies, see page 118.

Once the cookies have been retrieved from a user's computer, you use the `getName` and `getValue` methods to retrieve the name and value stored in a cookie. The `getName` and `getValue` methods return string values. You can use an expression to display the name and value returned by the methods in the JSP page.

When working with cookies, keep in mind that a Web browser may be configured to reject cookies or may be located behind a security firewall that filters out cookie information. In such cases, you will not be able to read a cookie on a user's computer.

Extra

To verify that at least one cookie exists, you can use the `length` method to check if the array of `Cookie` objects contains any information. An error may occur if you attempt to access elements of an array that do not exist.

Example:

```
<%
if (cookiesFromClient.length > 0)
{
    out.print("Name:");
    out.print(cookiesFromClient[0].getName());
    out.print("<br>Value:");
    out.print(cookiesFromClient[0].getValue());
}
%>
```

The `equals` method allows you to evaluate a string value so you can then perform an action based on the evaluation. This is useful for working with the names and values of cookies returned by the `getName` and `getValue` methods. For example, you can compare the value of a cookie returned from a user's computer to a string you specify and display a customized message depending on the value.

Example:

```
<%
if (cookiesFromClient[0].getName().equals("beenHere") &&
    cookiesFromClient[0].getValue().equals("yes"))
    out.print("Welcome Back!");
else
    out.print("Welcome to my Web site.");
%>
```

READ A COOKIE

```
Untitled - Notepad
File Edit Search Help
<%
Cookie[] cookiesFromClient = request.getCookies();
%>

<html>
<head>
<title>Read a Cookie</title>
</head>
<body>

A cookie on your computer called<b>

</b>has a value of<b>

</b>
</body>
</html>
```

1 Type `Cookie[]` followed by the name of an array you want to use to store all the cookies on a user's computer.

2 Type `= request.getCookies()` to retrieve the cookies stored on a user's computer and place the values in the array.

```
Untitled - Notepad
File Edit Search Help
<%
Cookie[] cookiesFromClient = request.getCookies();
%>

<html>
<head>
<title>Read a Cookie</title>
</head>
<body>

A cookie on your computer called<b>

<%= cookiesFromClient[0].getName() %>

</b>has a value of<b>

</b>
</body>
</html>
```

3 To retrieve the name of the cookie stored in the first element of the array, type the name of the array followed by `[0]` and a dot.

4 Type `getName()` to retrieve the name.

5 Type the code that uses the name of the cookie.

```
Untitled - Notepad
File Edit Search Help
<%
Cookie[] cookiesFromClient = request.getCookies();
%>

<html>
<head>
<title>Read a Cookie</title>
</head>
<body>

A cookie on your computer called<b>

<%= cookiesFromClient[0].getName() %>

</b>has a value of<b>

<%= cookiesFromClient[0].getValue() %>

</b>
</body>
</html>
```

6 To retrieve the value of the cookie stored in the first element of the array, type the name of the array followed by `[0]` and a dot.

7 Type `getValue()` to retrieve the value.

8 Type the code that uses the value of the cookie.

```
Read a Cookie - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Home Search Favorites History
Address http://127.0.0.1:8080/examples/readcookie.jsp Go Links
A cookie on your computer called UserName has a value of Tom
```

9 Save the page with the `.jsp` extension and then display the JSP page in a Web browser.

10 The Web browser displays the results of reading a cookie.

READ MULTIPLE VALUES FROM A COOKIE

The `getCookies` method of the `request` object is used to retrieve all the cookies stored on a user's computer and returns an array of `Cookie` objects. After the cookies have been assigned to an array, the `length` method can be used to determine the number of elements in the array, which allows you to determine the number of cookies retrieved from the user's computer.

Keep in mind that some users may have disabled the exchange of cookies on their Web browsers. This is often done out of concern for privacy. Since no cookies can be stored on the user's computer, any attempt to read a cookie will indicate that no cookies exist and may result in an error. You should also keep in mind that you will not be able to retrieve a cookie from a user's computer if the cookie has reached its expiry time. If no cookies exist on the user's computer, the value returned by the `length` method will be 0.

Once it has been determined that cookies exist, a loop can then be used to examine each cookie and retrieve the names and values of the cookies.

Even if no cookies have been explicitly stored on a user's computer from a JSP page, there may still be cookies available to read, such as the cookie that stores the session ID. For information about the session ID, see page 96.

If your Web server uses JSP in combination with other technologies, such as ASP and PHP, your JSP pages will also be able to read the cookies created by ASP and PHP pages.

Extra

Any information retrieved from a cookie should be validated before it is used. For example, if you are reading a ZIP code from a cookie, you may want to check that the ZIP code contains the proper number of digits and does not contain any letters. Since invalid data may cause an error during the processing of the JSP page, you may want to add code to handle invalid cookie values passed to your JSP page.

When creating multiple cookies, you need to create a new `Cookie` object for each cookie you want to set. Even though multiple cookies are being created, only one cookie file will be created on the user's computer.

Example:

```
<%
Cookie firstCookie = new Cookie("UserName", "Tom");
firstCookie.setMaxAge(3600);
firstCookie.setPath("/examples");
response.addCookie(firstCookie);

Cookie secondCookie = new Cookie("UserAge", "26");
secondCookie.setMaxAge(3600);
secondCookie.setPath("/examples");
response.addCookie(secondCookie);
%>
```

READ MULTIPLE VALUES FROM A COOKIE

```
Untitled - Notepad
File Edit Search Help
<html>
<head>
<title>Read Multiple Values from a Cookie</title>
</head>
<body>

The following cookies have been located on your computer:
<br>

<%
Cookie[] cookiesFromClient = request.getCookies();
for (int x = 0; x < cookiesFromClient.length; x++)
{
}
%>

</body>
</html>
```

1 Type `Cookie[]` followed by the name of an array you want to use to store all the cookies on a user's computer.

2 Type `= request.getCookies()` to retrieve the cookies stored on a user's computer and place the values in the array.

3 Type the code to create a loop that will cycle through all the elements in the array. For information about creating a for loop, see page 42.

```
Untitled - Notepad
File Edit Search Help
<html>
<head>
<title>Read Multiple Values from a Cookie</title>
</head>
<body>

The following cookies have been located on your computer:
<br>

<%
Cookie[] cookiesFromClient = request.getCookies();
for (int x = 0; x < cookiesFromClient.length; x++)
{
    out.print(cookiesFromClient[x].getName() + " has a value of ");
}
%>

</body>
</html>
```

4 To retrieve the name of a cookie stored in an element of the array, type the name of the array followed by `[x].getName()`.

5 Type the code that uses the name of the cookie.

```
Untitled - Notepad
File Edit Search Help
<html>
<head>
<title>Read Multiple Values from a Cookie</title>
</head>
<body>

The following cookies have been located on your computer:
<br>

<%
Cookie[] cookiesFromClient = request.getCookies();
for (int x = 0; x < cookiesFromClient.length; x++)
{
    out.print(cookiesFromClient[x].getName() + " has a value of ");
    out.print(cookiesFromClient[x].getValue() + "<br>");
}
%>

</body>
</html>
```

6 To retrieve the value of a cookie stored in an element of the array, type the name of the array followed by `[x].getValue()`.

7 Type the code that uses the value of the cookie.

```
Read Multiple Values from a Cookie - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Home Search Favorites History
Address http://127.0.0.1:8080/examples/multiplevalues.jsp
Go Links

The following cookies have been located on your computer:
UserName has a value of Tom
JSESSIONID has a value of To1013mC7930499349978007At

Done Internet
```

8 Save the page with the `.jsp` extension and then display the JSP page in a Web browser.

The Web browser displays the results of reading multiple values from a cookie.

REMOVE A COOKIE

JavaServer Pages allows you to delete a cookie before it expires. This is useful if you no longer need the information in the cookie. For example, you may want to delete a cookie that contains user registration information if the user cancels their registration to your Web site. It may also be necessary to remove cookies if the size of your cookies exceeds the size limit for cookies in your Web site, which is usually 4 KB.

To remove a cookie, you create a new cookie with the same name as the cookie you want to remove, except you set the expiry time for the new cookie to zero seconds. This will cause the cookie to expire immediately. The value you assign to the cookie can be an empty string. If you specified a path when you created the original cookie,

you should also specify the same path when deleting the cookie to ensure that the correct cookie is removed. For more information about creating a cookie, see page 114.

Working with cookies is not always a simple task. While almost all Web browsers accept cookies, many Web browsers may return different information about cookies, such as different version numbers. Web servers and JSP engines also do not always work with cookies in the same way. For example, some Web servers will not allow a cookie to be removed from the client computer until the cookie reaches its original expiry time. When creating JSP code to work with cookies, you should thoroughly test your code on all Web browsers and client software you expect to access your JSP page.

REMOVE A COOKIE

```
Untitled - Notepad
File Edit Search Help
<%
Cookie removeCookie = new Cookie("UserName", "");
removeCookie.setMaxAge(0);
%>
<html>
<head>
<title>Remove Cookie</title>
</head>
<body>
Welcome. The information has been removed.
</body>
</html>
```

1 Type `Cookie` followed by the name of a `Cookie` object. Then type `= new Cookie()`.

2 Between the parentheses, type the name of the cookie you want to remove enclosed in quotation marks. Then type `,""` for the value of the cookie.

3 Type the name of the `Cookie` object followed by a dot. Then type `setMaxAge(0)`.

```
Untitled - Notepad
File Edit Search Help
<%
Cookie removeCookie = new Cookie("UserName", "");
removeCookie.setMaxAge(0);
removeCookie.setPath("/examples");
response.addCookie(removeCookie);
%>
<html>
<head>
<title>Remove Cookie</title>
</head>
<body>
Welcome. The information has been removed.
</body>
</html>
```

4 Type the name of the `Cookie` object followed by a dot. Then type `setPath()`.

5 Between the parentheses, type the relative path of the pages that can access the cookie enclosed in quotation marks.

6 Type `response.addCookie()`.

7 Between the parentheses, type the name of the `Cookie` object.

8 Save the page with the `.jsp` extension. When a user accesses the JSP page, the cookie stored on the user's computer will be deleted.

COOKIE METHODS

There are several useful methods of the `Cookie` object that you can use to manipulate and examine the contents of a cookie. Before using any of the following methods in your JSP code, you should check your Web server documentation to verify whether the Web server supports the method you want to use.

Method	Description
<code>Object clone()</code>	Overrides the standard <code>java.lang.Object.clone()</code> method to create a copy of the cookie.
<code>void setComment (String purpose)</code>	Includes a comment that describes the purpose of the cookie.
<code>String getComment()</code>	Returns a comment. Returns <code>null</code> if there is no comment.
<code>void setDomain (String pattern)</code>	Specifies the domain or server that the cookie belongs to.
<code>String getDomain()</code>	Returns the domain name for the cookie.
<code>void setMaxAge (int expiry)</code>	Specifies the expiry time of the cookie, in seconds. By default, a cookie will expire when the Web browser shuts down.
<code>int getMaxAge()</code>	Returns the expiry time of the cookie, in seconds. Returns <code>-1</code> if no expiry time was specified.
<code>String getName()</code>	Returns the name assigned to the cookie.
<code>void setPath (String uri)</code>	Specifies the location of the pages on the Web server that can access the cookie.
<code>String getPath()</code>	Returns the location of the pages on the Web server that can access the cookie.
<code>void setSecure (boolean flag)</code>	Specifies whether the Web browser needs to send the cookie using a secure protocol, such as HTTPS or SSL.
<code>boolean getSecure()</code>	Returns <code>true</code> if the Web browser must send the cookie over a secure protocol.
<code>void setValue (String newValue)</code>	Sets or changes the value for the cookie.
<code>String getValue()</code>	Returns the value assigned to the cookie.
<code>void setVersion (int v)</code>	Specifies the version number of the cookie protocol.
<code>int getVersion()</code>	Returns the version number of the protocol the cookie can use.