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Chapter 4: Optimizing web applications

This chapter describes how to optimize source code using the BlackBerry® Web Plug-in for Eclipse profiler tool, and how to use offline form queueing for efficiency.
4.1 Optimize source code using the BlackBerry IDE profiler tool

In this exercise, you will optimize source code using the BlackBerry Web Plug-in for Eclipse profiler tool that comes with the two BlackBerry web plug-ins: the BlackBerry Web Plug-in for Eclipse, and the BlackBerry Web Plug-in for Microsoft Visual Studio. You will use the BlackBerry Web Plug-in profiler tool to profile the efficiency of code sections by setting a breakpoint at the start and end of the section of code that you want to profile. After you set the breakpoints, you can start a debugging session with the BlackBerry Smartphone Simulator and view information about the code area.

1. In the BlackBerry Web Plug-in for Eclipse, create a new Dynamic Web Project and name it LocalAjaxWeather.

2. Accept the J2EE perspective the wizard proposes.

3. In the Package Explorer, expand the LocalAjaxWeather folder, and its WEB-INF subfolder.

4. From this folder, copy the three files ajax.js, index.html and weather.jsp, into the WEB-INF folder.

5. Navigate to Window > Show View > Other..., and then select Server.

6. In the Servers view, right-click, and then select New > Server, expand Apache, and then select the Apache Tomcat version 6.0 Server.

7. Click Next, and then retrieve your project (LocalAjaxWeather) from Add And remove projects.

8. When prompted for a location, point to the folder where you installed Tomcat (for example c:\Tomcat\), and then click Finish.

9. In the Servers view, right-click on the Tomcat server, and then select Start. Now your application is ready to be executed/debugged.

10. In the Package Explorer, expand your project (LocalAjaxWeather), and then select index.html. Right-click it, and then select Debug as, BlackBerry Web. The application runs in Debug mode on the simulator.

11. Run the application on the BlackBerry Smartphone Simulator, change a different location, and then click OK several times.

12. Profiling: From the Window menu, click Open Perspective, and then select BlackBerry Web/Widget Perspective.
13. From this perspective open tXmlHttpView and watch the content of the XmlHttpRequest and XMLHttpResponse. Notice how double-clicking the fields of the request opens the corresponding response. Notice the Header, Status Code and Response fields.

14. Click on the Resources Loaded view. Notice the profiling information about the resources (download times, size, for images and JavaScript® files, as well as for the CSS and HTML files).
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4.2 Define queues for offline form submission

In this exercise, you will define offline form-submission queues. When you define offline form submission queues, BlackBerry smartphone users can complete and submit forms and continue browsing without waiting for the form to be submitted or worrying about whether they are in a wireless coverage area. The browser continuously processes any queued forms and submits the forms in the background.

1. Create a Form Submission page. This web form contains all of the information to be collected from the end user.

```html
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

<html xmlns="http://www.w3.org/1999/xhtml">
<head>
    <title>Form Submission</title>
</head>
<body>
    <form id="form1" method="post" action="DataCollection.htm">
        <div>
            Form Data:
            <select id="ddlData" name="ddlVote">
                <option value="1">1</option>
                <option value="2">2</option>
                <option value="3">3</option>
                <option value="4">4</option>
                <option value="5">5</option>
            </select>
        </div>
        <input id="Submit1" type="submit" value="Submit" />
        <br />
        <div>Note: This page needs to have the following HTTP headers added: "x-rim-queue-id" and "x-rim-next-target"</div>
    </form>
</body>
```
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2. Create a Confirmation page. This web page displays a message to the user that the form will be submitted whenever the BlackBerry smartphone is back in coverage (if not currently in coverage).

```html
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
    <title>Confirmation</title>
</head>
<body>
    <form id="form1" runat="server">
        <div>
            Your form has been submitted!
        </div>
    </form>
</body>
</html>
```

3. Create a Data Collection page. This web page collects all of the information submitted in the form submission page. The data is collected in the post data from the form submission page.

```html
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
    <title>Data Collection</title>
</head>
<body>
    <div>
        Retrieve post data from Form Submission page
    </div>
</body>
</html>
```
4. Set the following headers to create the form queue:
   - “x-rim-queue-id”—Specifies the Offline Form Queue to which any GET or POST requests from form submissions on this page should go. Set this value equal to “OfflineForms”.
   - “x-rim-next-target”—Specifies the next page to load after sending any GET or POST requests resulting from this page. Set the value equal to the URL of the confirmation page.

   a. The following code shows an example of how to set the header values using Java:
   ```java
   HttpConnection.setRequestProperty("xrim-queue-id", "offlineforms");
   HttpConnection.setRequestProperty("xrim-next-target", "Confirmation.htm");
   ```

   b. The following code shows an example of how to set the header values using Microsoft .Net (C#):
   ```csharp
   Response.AddHeader("x-rim-queue-id", "offlineforms");
   Response.AddHeader("x-rim-next-target", "Confirmation.htm");
   ```

5. Set the action attribute on the form equal to the URL of the Data Collection page.

6. Start the BlackBerry MDS simulator.
   a. Start the Device simulator.
   b. Open the Form Submission page in the browser.
   c. View the Form Submission page and verify that the user can enter data and that the results are similar to the following diagram:
d. View the Confirmation Page, which notifies the user that the form has been submitted into a queue.
e. View the **Offline Queues** menu. The menu now contains an item to view the offline queues.

f. View the Offline Queues List, which shows all offline queues that have been created on the BlackBerry smartphone.
g. View the Queue Submission List to see all of the items in the selected offline queue.

h. View the Queued Submission Result, which shows the resulting page after the form is submitted.