Chapter 13

Extended Developer Tools

While developing the sample application in the previous chapters you saw many features in the APEX development tool. This chapter will highlight advanced development features in APEX that were not covered in the previous chapters. These features—or tools, as I prefer to call them—may help when developing large applications in a corporate environment.

**Note** This chapter assumes that you are comfortable with APEX and understand the fundamentals. If you are still not comfortable developing an APEX application, I strongly recommend that you redo the examples from chapters 1 through 10 in order to become more comfortable with APEX and its development environment.

Page Locks

When developing in larger teams, development conflicts occur. A development conflict is when two developers are working on the same object at the same time and overwrite the other’s changes.

**Note** For the remainder of this chapter, references to APEX objects imply page items, regions, lists, pages, etc.

Conventional web development tools, such as ASP, PHP, and JSP, contain multiple files that each represent a page or a set of functions within the web application. When developing with these tools, it’s common practice to use a source control tool, such as Subversion, to manage all the changes. That’s because source control tools can easily manage development conflicts between multiple developers as they are isolated to a single file.

APEX is different than the scripting languages just mentioned because developers do not work with files. All of the information is stored in tables within the database. Currently, these tables reside in the APEX_040000 schema. When you create an export of an application you get a single SQL file that contains many insert statements into these tables. Since APEX stores its content within the database, you can’t use traditional source control tools to manage conflicts when developing in teams with multiple developers.
APEX Conflicts

To demonstrate a development conflict in APEX, imagine that you have two developers, Mina and Natalie, working on the same page within an application. If they are both adding and modifying page components at the same time, the page may not behave as expected for either of them.

APEX will prevent developers from modifying the same object at the same time by performing optimistic locking. Table 13–1 shows the sequence of events that will occur as the two developers edit the same object. You can see at the end how APEX prevents Natalie from overwriting the changes made by Mina.

Table 13–1. Optimistic Locking Scenario

<table>
<thead>
<tr>
<th>Step</th>
<th>Mina</th>
<th>Natalie</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Edit P1_EMPNO</td>
<td>--</td>
</tr>
<tr>
<td>2</td>
<td>--</td>
<td>Edit P1_EMPNO</td>
</tr>
<tr>
<td>3</td>
<td>Edit help text to: “Mina’s Help”</td>
<td>--</td>
</tr>
<tr>
<td>4</td>
<td>--</td>
<td>Edit help text to: “Natalie’s Help”</td>
</tr>
<tr>
<td>5</td>
<td>Apply Changes</td>
<td>--</td>
</tr>
<tr>
<td>6</td>
<td>--</td>
<td>Apply Changes</td>
</tr>
</tbody>
</table>
| 7    | --                          | Receive error message: ORA-20503: Current version of data in database has changed since user initiated update process. current checksum = "9A4B0C15B18DA7A89A3F15A0B982B500" application checksum = "4A157EAF6B2C7E67DA3BBDD655C4467C"

Optimistic locking only works when developers modify the same object. The problem occurs when multiple developers are modifying different objects on the same page at the same time. Modifying one object may affect the process of the entire page, which other developers may not be aware of. Pessimistic locking helps prevent trouble in that scenario. I’ll discuss how to do pessimistic locking next.

Locking an APEX Page

The easiest way to prevent issues from occurring when developing an application with multiple developers is to lock a page before working on it. Locking a page will prevent other developers from modifying the page while you’re working on it. Developers can still view the page and its components while a page is locked; they just can’t make any modifications to the page.

The following process will lock a page:

1. On the page edit screen, click the lock icon in the top right corner, as shown in Figure 13–1