eXtendia™

Advanced Features

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Chapter 1.
Advanced Program Features

Introduction

This user guide introduces you to the advanced features included in eXtendia.

eXtendia is one of the most powerful Web-based application creating tools available. It enables you to create dynamic Web-based applications to work on a variety of Web servers powered by UNIX or Windows operating systems and database servers.

Using eXtendia's Dynamic page Editor, you can easily create and develop dynamic pages for your Web application, and only while generating the final resources; you select ASP or JSP as the output server side scripting language, in order to make them work with the Web server you use.

> *Note: If you are planning to develop dynamic components for your Web application, you should code using your target output language (ASP or JSP) as eXtendia will not translate your custom components from ASP to JSP and vice versa. See the section on Dynamic Component Library later in this chapter.*

eXtendia is a completely new product designed for enterprise applications. To maximize your use of eXtendia we recommend that you install the software with all of its components. The minimum installation (i.e. installing the basic system without most of the optional components) will occupy 115 MB of hard disk space, while the full installation will occupy 330 MB. If you have enough hard disk space, we recommend that you install eXtendia with all of its components.

Refer to Installation Instructions found in the Main User Guide to install the eXtendia development system on your computer.

This chapter will introduce you to the following new components and features:

- Positioned Hidden Variables
- Dynamic Component Library
- The File Control Form Field
- Text Line Validation
- Image Style
- Image Button
- Table Style
- Delete Unnecessary Files

Positioned Hidden Variables

Hidden variables are variables that are generated or used in the ASP, form codes, or dynamic pages of the Web application. In other versions of the program, the hidden variables are inserted in the front of the form. However, there are instances that you may want to insert a hidden variable in other places in the code. eXtendia enables you to do this with the new Hidden Variables feature.

This provides you (the Web-based application developer) with great new capabilities. Some examples of where you may have a need for this are: if the form has to send a value to the next page, or use a value which is not entered by the buyer but one that is created by the dynamic page code based on certain inputs or criteria. These could be fixed variables that you have entered in the dynamic page code to be used under certain conditions, or they could be variables or data generated by the dynamic page code in real time based on certain events.

When using WebShop (i.e., one of the previous versions of eXtendia), in both cases, such variables or data are automatically placed in the front of the form using the Form Property dialog box. In this case the hidden variables are associated with the actual form code.

With eXtendia, the hidden variable is still associated with the form, and is still inserted automatically by the program, but you can insert this code anywhere in the form code you want, for example in the middle of the form code.

For example, if the code is reading records from the database, record-by-record in a cycle, and puts these records on the Web page, you

can now place a button next to each record that can get and display more information about that product or database item. If the visitor clicks on such a button, the form gets or posts another page with parameters and hidden variables and displays a different Web page with the detail information. In such a case the hidden variable must be in the same cycle of the code. You can do this by using the Positioned Hidden Variables feature.

To do this, first create a dynamic page with a database driven table in it. Refer to the Database Driven Table section in the second chapter for more details. Assign a hidden variable to a form field that will appear in each row of the table such as a check box or a submit button. Now (when displayed) the hidden variables in each row may hold specific values for each record.

In previous versions of the program you may have been able to do this but with lots of special programming, where the dynamic page code would perform these functions. It was difficult to manage the process and make sure it works properly all the time. Now eXtendia achieves this more accurately and with much less development work.

Dynamic Component Library

WebShop included the option to insert custom dynamic page scripts that could be used in regular Web pages. The Dynamic Component feature is similar to custom scripts yet much more powerful. It is designed to be used in dynamic pages and enables you to code specialized and more complicated server side scripts.

With eXtendia's JSP dynamic page creation, you can write custom dynamic components in JSP to be used with your JSP Web-based applications.

When creating dynamic components in eXtendia, you must first decide what your Web application's host environment is. This is necessary to choose between JSP and ASP as your Web application output language.

If the target Web server is JSP compliant or the server operating system is UNIX, you must select JSP in the Dynamic Component Editor and type JSP code for your components, as well as select JSP as your output type while generating your Web-based application's resource files.

If you are planning to generate your Web application for both ASP and

JSP, you may select the language from the drop-down box in the Component Editor's general tab and type your code in appropriate language in the Body tab, then you can repeat the procedure for the other language. eXtendia will use the proper component code for the generate-time output type.

Although more powerful, creating and using custom dynamic components requires you to be familiar with ASP or JSP coding. See the example at the end of this topic.

A dynamic component, therefore, is a custom program or query written by you in ASP or JSP, which is not created or generated by the program's built-in Dynamic Page Editor. The ESGs that are created by Boomerang Software and work with eXtendia include their own Dynamic Components.

One of the most exciting benefits of this feature is the ease of repeating a custom component in more than one page. For example: If you want to display the date or any dynamic data in the top of every page of your Web application, instead of inserting the appropriate code in every page, you can create a dynamic component, save it in the Dynamic Component Library, then use the Dynamic Page Editor's Manager window and insert it wherever you want.

eXtendia enables you to create, modify and organize the dynamic components you create with the use of the Dynamic Component Library.

You can create as many dynamic components as you want. The program ESGs (Enterprise Solution Generators) include many dynamic components that you can check to see how this feature works.

For example, the E-Commerce Offline-Online template and ESG includes a number of dynamic components that are used in the actual application. To see some of these dynamic components, open the E-Commerce ESG or template, and select **Library > Edit Dynamic Component Library** menu.

The Dynamic Component Editor dialog box appears. Click on any of the listed components in the Component Name list, and click on the different tabs to examine the details of that component. You may edit the specific component if you like, or create your own and add it to the library of components.

If you are starting a brand new project, you may want to create your own dynamic components and build your own library.
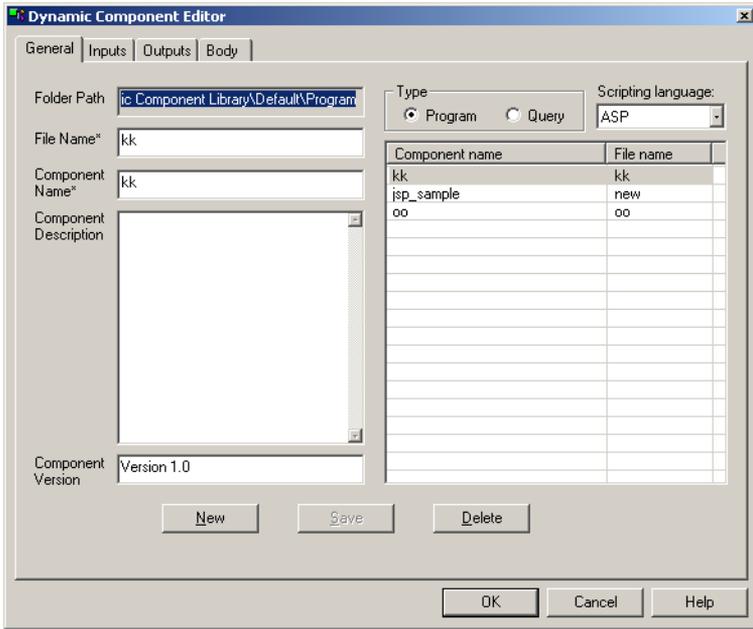
Figure 1.1 Dynamic Component Editor - The General tab

The following sections describe the details of each tab and the fields of the Dynamic Component Editor dialog box:

General Tab

- **Folder Path**: Displays the full path of the destination folder where the current dynamic component is created. You cannot modify this data.

- **File Name**: You must enter the name of the Dynamic page you have opened for editing.

- **Component Name**: You must enter the name of the dynamic component you want to create. If you select an existing component from the Component Table, this field will display the name of that component.

- **Component Description**: You may use this field to add some notes about the component you are creating.

- **Component Version**: Displays the version of the component. The default value is "Version 1.0".

- **Type**: Here you can select whether you want to create or modify a program or query component.

- **Scripting Language:** Enables you to select the server side scripting language for the component code that you want to insert in the Body tab.

- **Component Table**: Lists the components that exist in the folder that appears in the Folder Path field.

- **New button**: Enables you to create a new component.

- **Save button**: Saves the dynamic component you have created or modified.

- **Delete button**: Deletes the selected dynamic component.

Inputs Tab

Enables you to add, modify and delete input parameters for the selected dynamic component.

Click the Add button to bring-up the Add dialog box where you can define the Item name, its description and type.

The Modify button is active if an existing parameter is selected. Click on it to bring-up the Modify dialog box, where you can modify the settings of the Dynamic Component i.e. name, description and type.
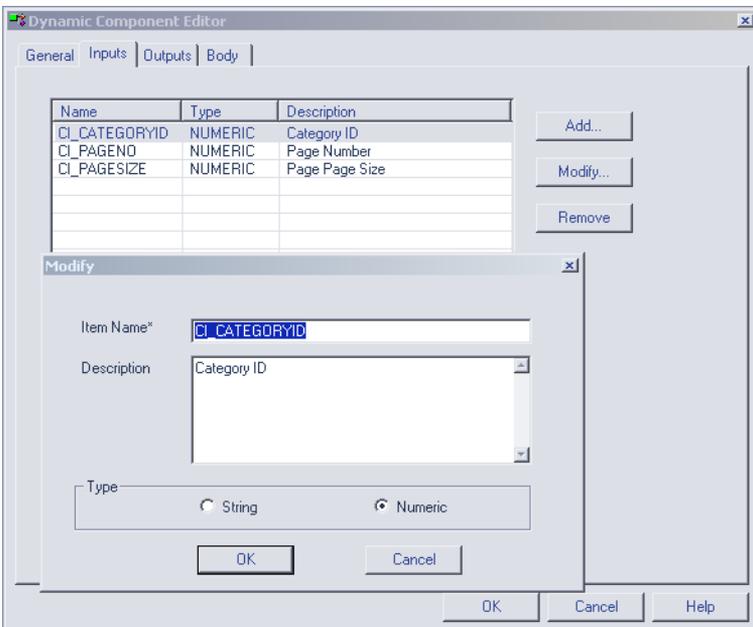
Figure 1.2 Dynamic Component Editor - The Inputs tab
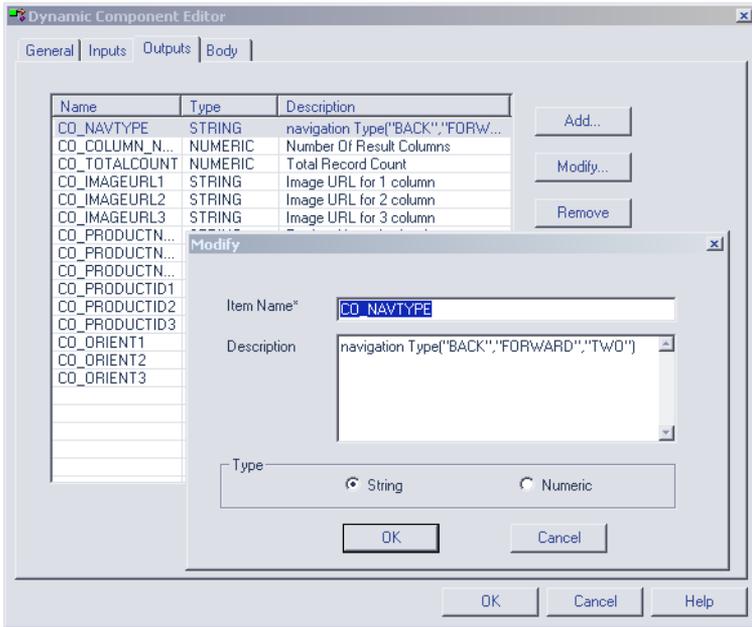
Figure 1.3 Dynamic Components Editor - The Outputs tab / Modify dialog box

Outputs Tab

Similar to the Inputs Tab, the Outputs Tab enables you to add, modify and delete output parameters for the selected dynamic component.

Body Tab

Enables you to manually modify the component parameters by writing and entering actual code yourself. You may use the upper window to copy and paste the component's input and output parameters for quicker development and to void typing errors.

Example

Let us say you want to add the date on every page of your Web application. To do this:

1. Open your Web application project by selecting the **File > Open...** or start an empty project by selecting **File > New** and selecting the big X.
2. Create a dynamic page by clicking in the Site Manager window and selecting **Physical Layout > Create Dynamic Page**. Save it under the name "**test.asp**".
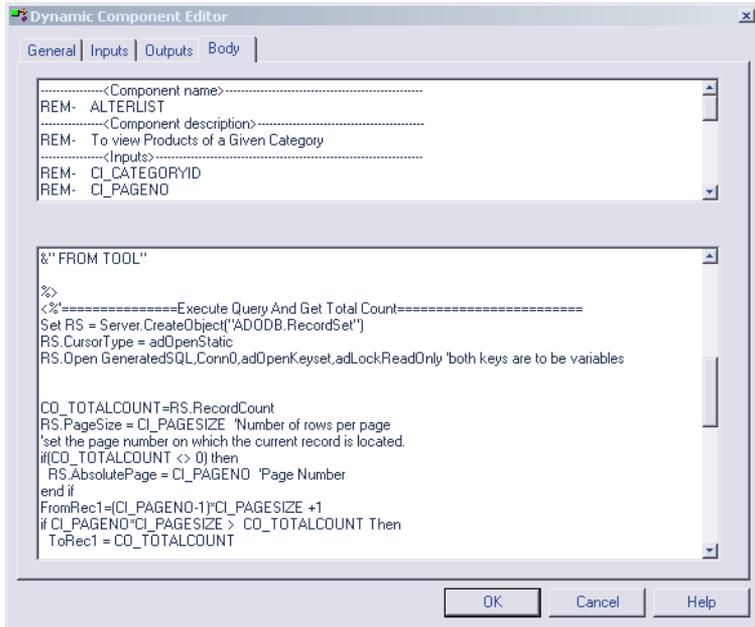
Figure 1.4 Dynamic Components Editor - The Body tab

3. Select **Library > Edit Dynamic Component Library...** The Dynamic Component Editor starts-up.

4. Make sure the Type radio button is set to Program.

5. Type-in the File Name* field `DateEntry`. This is the name of the file that holds your component and is stored on your hard disk.

6. Type-in the Component Name* field `InsertDate`. This is the name of the component that you will use while building this Web application.

   Note: The "File Name" and "Component Name" can hold the same value. However, in some cases, you may want to give them different names.

7. Describe this component in the Component Description field to make sure you can find it easily in the future.

8. Let's assume you want the date to be displayed in red. However, under certain circumstances the color may be changed as indicated in `strDateColor`, which has a dynamic value (i.e. can be changed by dynamic pages or the server). To do this, select the Inputs tab.

9. Click **Add**. The Add dialog box appears.

10. Type in the Item Name* field `strDateColor`. We assume that either you already have such a parameter used in your Web application or you will define it here and use it from now on.

11. Fill in the Description field.

12. Make sure the Type radio button is set to String. Click **OK**.

13. Select the Body tab. In the lower textbox, enter the following code:

```
vDate = Date()
Response.Write("<FONT color=#")
Response.Write(strDateColor & ">")
Response.Write(vDate)
Response.Write("</FONT>")
```

14. Click **OK**. A message prompt will ask you if you want to save the changes. Click **Yes**.

    *Note: Anytime you want to review your component, select **Library > Edit Dynamic Component Library**.*

15. From Site Manager's Physical Layout window, double-click on '**test.asp**' (that you have created in step 2) to open it.

16. In the manager section of the Dynamic Page Editor, right-click on ROOT and select **Add Into > Component**. You can see the component icon attached to **ROOT**.

17. Double-click the component icon and the Component Properties dialog box appears.

18. From the Choose component drop-down box select InsertDate.

19. From the Input parameters tab double-click the strDateColor. The Modify dialog box appears.

20. In the Value tab, Insert Value textbox, insert the value **ff0000**. Click **OK** both in Modify and Component Properties dialog boxes.

21. Generate your Web application and test it as you usually test your dynamic pages. The result will be an empty page that displays the date in red.

The File Control Form Field

The File Control Field is an element that can be added to a form. You can use it to enable the visitor to browse or point to the path or to a local file. The visitor can type the path in the text box, or click the **Browse...** button, navigate and point to the file.

Figure 1.5 The File Control Properties dialog box

Important Note: For this control feature to work, the eXtendia COM objects must be properly installed on the server where your Web application is located. Contact your server's administrator and make sure this is done. If COM objects are not installed, refer to the chapter on Server Related Topics to learn more about this. It explains how the COM objects can be installed on the server.

1. To insert a form in a page, first select **Insert > Form** from the menu.

2. To insert the File Control select **Insert > Form Field > File Control...** The **File Control Properties** dialog box appears.

3. In the Name field type in a name for the File Control.

4. Type in or change the value of the Field Size field by clicking on the increment or decrement buttons.

5. Click the **Advanced...** button if you want to perform advanced operations with HTML coding and scripting. The **Advanced Web Operations** dialog box appears. Enter any special or advanced code that you want.

6. Click **Hidden Variables...** if you need to assign the hidden variable parameters such as Name and Value to this selected Form component. The **Hidden Variables** dialog box appears. Click **Add...** In the **Add Hidden Variable** dialog box type in a name and a value and click **OK**.

Text Line Validation

The **Text Line Validation** dialog box enables you to have the input form on the web page validate data being entered by the visitor.

In the Display name field enter any text that the form field will display as a default text in the form. This appears when the form is displayed.

Figure 1.6 The Text Line Validation dialog box

In **Data type** combo Drop-down box, select one of the validation criteria to be performed on that field. The criteria options include:

- Ignored
- Text
- Integer
- Decimal

In the **Data Length** section you may check the **Required** checkbox if you have specified text data for the **Data type**. Enter numbers in the **Min Length** and **Max Length** value fields. This will force the visitor to enter an alphanumeric string which is no less than and no greater than the length in characters that you specify.

In the **Data Value** section you may enter the acceptable conditions or criteria that you want to apply to the visitor's inputs. Use **Field must be** and **And must be** check boxes, operation selectors and **Value** data boxes to set the limits for the data entered by the visitor. If the visitor enters data that does not comply to the criteria you specify, the data is not accepted and the user is prompted to try again. The operations include:

<   if the Field value is less than the right operand of binary operation

<= if the Field value is less than or equal to the right operand of binary operation

<> if the Field value is not equal to the right operand of binary operation

= if the Field value is equal to the right operand of binary operation

> if the Field value is more than the right operand of binary operation

>= if the Field value is more than or equal to the right operand of binary operation

Click **OK** after you specify all the criteria that you want.

Click **Cancel** to quit.

Image Style

To access the **Image Style** dialog box (Figure 1.7), go to the **Styles Layout** in the **Site Manager** window and double-click the **Image Style** section. This feature enables you to set an image style for the entire Web application. This image link will be available on every web page of your Web application.

To assign a new image style, first fill out the **Image Style Group** field. Click **Add**. Click on **Rename** or **Delete** buttons if you want to rename or delete the currently selected image style.
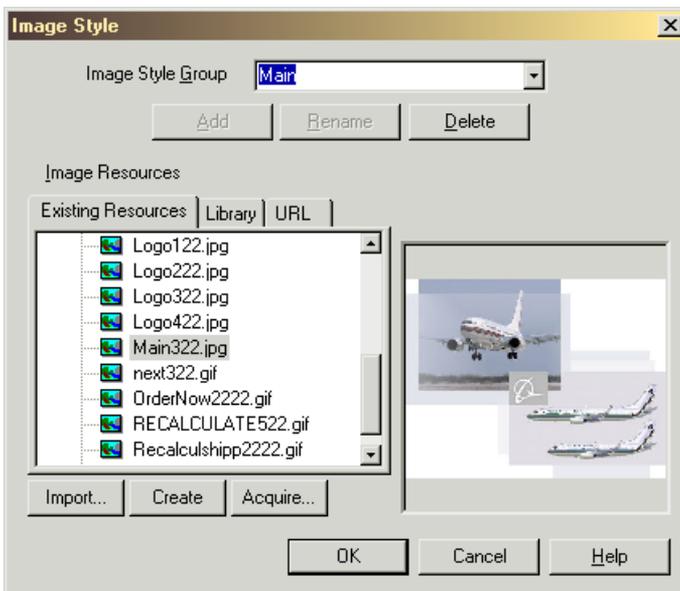
Figure 1.7 The Image Style dialog box

Select an image resource that should be assigned to this specific Image Style. To do this, select an image from **Image Resources** panel by clicking **Existing Resources**, **Library** or **URL**, respectively. You can also use the **Import...**, **Create** and **Acquire...** buttons to get images. These enable you to browse and import, create an image using the available images on your PC, or acquire an image from scanners or digital cameras.

Click **OK** when done.

Click **Cancel** to quit the dialog box without saving the changes.

Image Button Form Field

It is sometimes more interesting to use image buttons instead of regular buttons in Forms. Furthermore, eXtendia enables you to assign hidden variables to Image buttons, whereas under normal circumstances, regular buttons cannot perform this function.

To insert an image button click inside a form area and select **Insert > Form Field > Image Button...** The Image Button Properties dialog box appears (Figure 1.8).
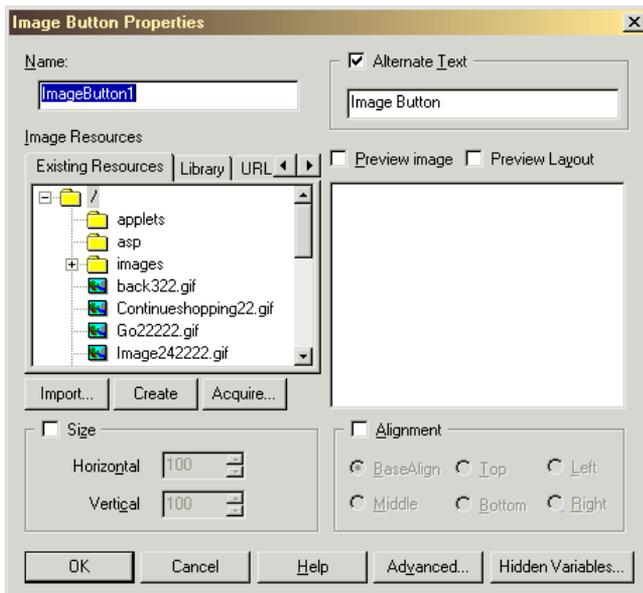
Figure 1.8 The Image Button Properties dialog box

Table Style

eXtendia enables you to create or modify visual settings for table objects that you want to use in the design of your Web application. You can access the **Table Style** dialog box (Figure 1.9) from the **Style Layout** by double-clicking the Table Style section.

To start creating a new style, go to the **Style Layout** in the **Site Manager** window. From the Site Styles section select the style that will include the new table style. Scroll down the right pane until you see the Table Style section. Double-click on it. The **Table Style** dialog box appears. Place the cursor in the **Table Style Group** section and enter the name of the style you want to create.

To start working on an existing table style, click on the drop-down arrow from the **Table Style Group** section and select the table style you want to modify.

The **Cells Group** drop-down list enables you to set the visual appearance (background and text colors) of various cell groups listed in the dialog box. These are the Header, Footer, Body Rows, and Patterned Row.

To edit a cell group color, double-click on the corresponding color box in the **Cells Group** section to access the **Color** dialog box of the program.
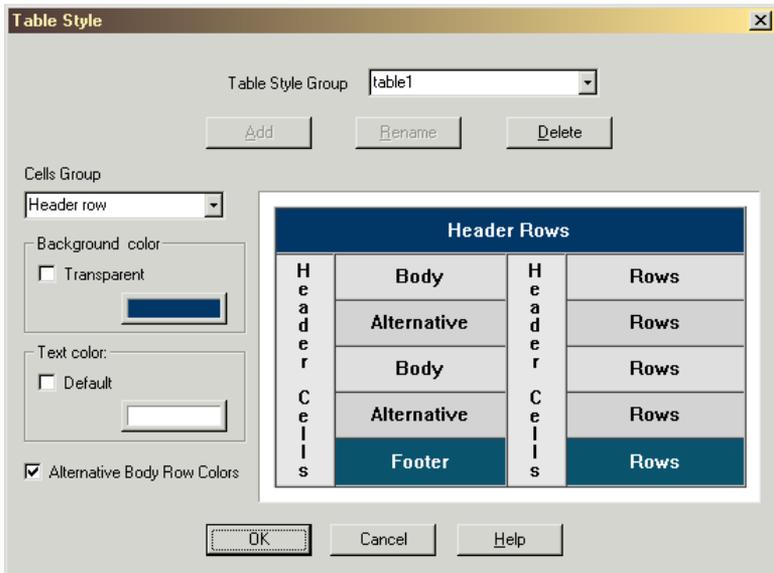
Figure 1.9 The Table Style dialog box

If you check the Alternative Body Row Colors checkbox, the table will get a striped or patterned style.

Delete Unnecessary Files

As you work on your Web-based application, evolve it, edit it and modify it, inadvertently you end up having resources or files in your Web application project that are no longer needed or no longer used by the Web application. They remain in your project unused, simply taking up space and creating confusion. eXtendia enables you to cleanup your Web application project by accurately removing such files.

This removes unnecessary files, reduces the amount of space your Web application requires, speeds up the publishing part of the Web application and may save you money if you are being charged for hosting your Web application, based on the amount of space your Web application uses. eXtendia searches the entire project and automatically finds which files are or are not used, and removes the ones that are not used.

To remove the unnecessary files from your project before you publish your web project to the server, select the Site Analyzer window then select **Physical Layout > Delete Unused > (the type of unnecessary files you want to delete)**.

Important Notes:

1. Before you perform this operation make sure you have backed up your Web project files in a separate folder on your PC. In case the clean up process breaks anything, you can revert to the Web application version that works.

2. Some files are dynamically called to be used only by dynamic pages. If this is the case in your Web application, then be very careful and do not delete such files. Especially DO NOT use this feature for the type of files your dynamic pages call.

3. Remember that this feature deletes files from eXtendia project or Web application located on your development PC. If you already have published your Web application to the server and then perform the Delete Unnecessary Files operation, it does not delete files from your Web application on the server. When you do a Site Publish or upload your Web application to the server, and if a previous version of the Web application exists on that same server, then the new uploaded Web application overwrites the existing one but it does not delete the

unnecessary files on the server. To clean up the Web application on the server, you must first delete the Web application (not the databases) then upload or publish the new cleaned up one. It is also recommended that you back up the Web application on the server before you publish a cleaned up new Web application, just in case you delete a page or resource that you should not have, then you can always restore the original Web application while fixing the problem.

Chapter 2.
Working with Different Databases

Introduction

This chapter introduces you to the following new concepts and features:

- Working with Oracle, MySQL, or MS SQL Databases
- Database Driven Tables
- Database Query Functions

eXtendia enables companies to build Web-based applications that tie into their existing databases. eXtendia, itself, uses the MS Access database as its inner default database. If you start with a pre-designed eXtendia Solution Generator to create your eXtendia project, it will create or use its own MS Access .mdb database file.

This does not mean that you may not use another external database. You can create your own database with its own database schema or structure using the Microsoft Access program. You can also use an existing Access database file, which has its own database schema or structure. In either case, you can import the database structure into eXtendia. This will enable your Web application to access and use your existing or newly created databases.

In such cases, when publishing your site, the database file (for example ShopDB.mdb), will be uploaded to your Web location along with your site content. You can choose to generate or publish only parts of your site, and in particular you may choose to publish the site without uploading the database.

eXtendia generates the ASP or JSP code for the dynamic pages you created using the Dynamic Page Editor. These scripts enable your site to interact with site database(s).

If you have Oracle or MS SQL databases already created and operational on a server accessible to you and your generated site, eXtendia enables you to work with them as well.

Working with Oracle, MySQL, or MS SQL Databases

eXtendia needs to get introduced to the database structure, which will be used for the site or the Web-based application.

Besides the ability of working with MS Access databases, eXtendia enables you to create Web applications that work with your existing databases that reside on MS SQL, MySQL, or Oracle database servers. To create a Web site or Web-based solution that uses an MySQL, Oracle, or MS SQL database, you must first import those database structures into eXtendia.

In order to enable eXtendia to work with your database structure, you must import the database in eXtendia. Database import from an MS SQL, MySQL, or Oracle database will import only the database structure and not the database data. After the database import is done successfully, you will be able to design queries to that database in your dynamic pages. eXtendia will code your dynamic pages appropriately in order to make them able to connect to your target database table fields.

To import a database structure

1. Create a folder in the Site Manager - Physical Layout and name it "database".
2. Select the newly created database folder and right-click inside it. From the pop-up menu select Import Database… The Database Connection dialog box appears.
3. From the Database & Provider Type drop-down box select your source database type.
4. To import an MS Access database click **OK**. The Open dialog box appears. Browse and select the MS Access file and click **Open**.
5. For MS SQL or Oracle databases fill out the form and click **OK**.

   Note: In the Schema field, you must insert the schema name (for MS SQL the owner name) where the tables you want to import reside.

6. If eXtendia was able to connect to the database server by the login information you provided, the Import Database Tables dialog box appears. Check out the tables you want to import and click **Import**. You will see several messages displayed in the Messages tab that provide information about the import procedure.

7. When the database import is over, a message indicates that the database import finished successfully. Close the Import Database Tables dialog box and the imported database is inserted into your project in the MS Access format.

When the import process encounters any problem, an error message appears and asks you whether you want to continue the import process or abort it. If you click **Yes** and select to continue importing the database, after finishing the import process, eXtendia indicates the error(s) occurred during the import process. If you are satisfied with the results regardless of the errors encountered, click **Apply** and the database structure is imported to your eXtendia project.

Once you have imported your database structure into eXtendia, you can start building your Web-based application. It does not matter that the database is mostly empty. The fact is that it matches the actual or real database structure that you will eventually use. After you complete building the Web project, publish or generate it. Do not use the empty or dummy database generated by eXtendia, instead delete or remove it from the Web application and use the real Oracle, MySQL, or MS SQL database instead.

Important Notes on Importing Databases

You can import an Oracle, MSSQL, or MySQL database into eXtendia if data tables contain fields, and where the data types are convertible to MS Access data types. For example:

- The Oracle 8 data types: BLOB, CLOB, NCLOB, BFILE do not have their analogs in MS Access. In old databases, these were used to keep images or complex binary objects instead of URLs referencing various types of objects. The more efficient database structures organize the data where URLs are used in the database instead. Note that you can still use these with eXtendia, using the program's custom dynamic components and custom query components features. These enable you to perform any action that you like including extra ASP or

JSP components or other code.

- The Oracle data type 'number' is translated to its corresponding MS Access data type if its precision value is between 1 and 28.

- When importing tables all database constraints, such as UNIQUE, CHECK, PRIMARY KEY, FOREIGN KEY are discarded and only the fields' attributes are transferred.

    Note: To see how eXtendia converts data types while converting databases to other types, refer to Appendix B "Data Type Conversions."

Exchanging Data among MS Access, MS SQL, MySQL, and Oracle Databases

Using eXtendia, you can easily create a Web-based application, which is capable of performing sophisticated data exchange among several database servers of various types, regardless to the operating systems they are running on, and the physical location of the servers.

To realize such a project, you should first import database structures into eXtendia and then create a dynamic page that retrieves data (SELECT query) from one or more databases and then performs INSERT, UPDATE, DELETE or custom queries to other databases.

Note: For instructions on converting an existing database to another format, read the chapter "Converting Databases" in this user guide.

Database Driven Tables

A Database Driven Table is a table that displays data read directly from a database. It attaches the requests made to the Web application's database to the tables on the visitor's web pages. An example is an Internet search engine's search results page. Without this advanced feature, the designer of a web application, must not only query the database, based on visitor request, but also handle the results and place them in an organized format on the browser screens. This includes displaying the data without loosing any information, placing them in columnar and row format and to contend with other report-like layout challenges. The Database Driven Tables of eXtendia automate all this and provide embedded queries to tables. Without any programming, it enables the web application developer to place data gathered from the database directly on the web pages quickly and efficiently.
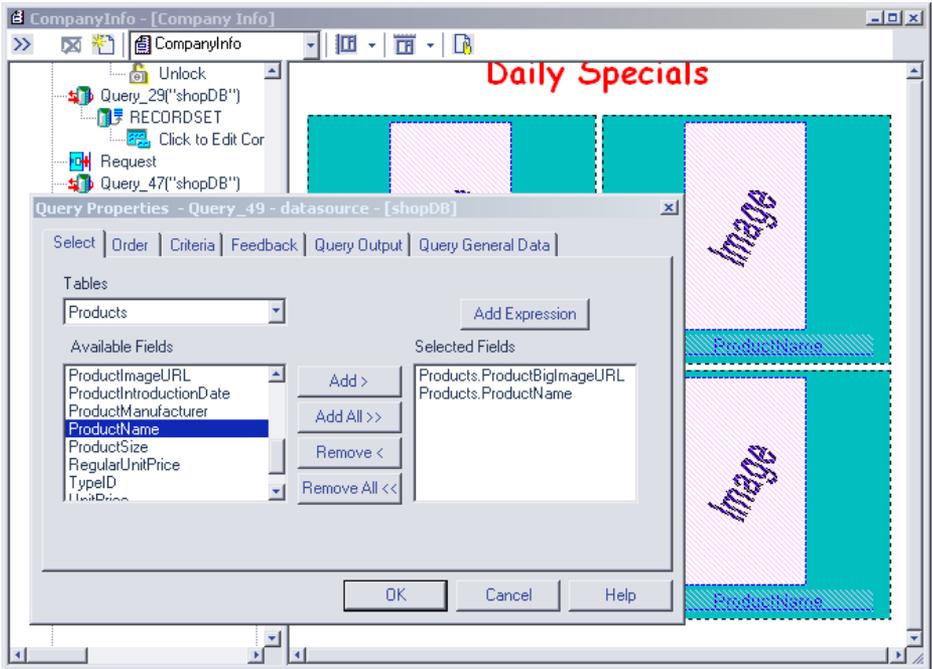
Figure 2.3 The Query Properties dialog box - The Select tab

This feature is available only on dynamic pages.

To create a database driven table

1. While you preview a dynamic page's feedback section, select **Table > Insert Table...** The **Table Properties** dialog box appears (Figure 2.3).

2. In the Cells section, specify how many rows and columns you want the table that will display the database query data to have.

   *Note: The **Number of Rows** is equal to the sum of the number of header lines and the number of rows that should be reproduced by each iteration. Unlike caption, header, and footer lines, in a database driven table the rows are repeated as long as the query returns values. For example, if you set the **Number of Rows** field equal to '4' and '1' for each of **the Header Rows** and **Footer Rows**, the table created will produce two rows for each query iteration.*

3. Select the created table, then select **Format > Object > Query Wizard...** from the menu, or right-click on the table and from the pop-up menu choose **Object > Query Wizard...**

4. From the **Choose Data Source for New Query** dialog box (Figure 2.3) find and select the source database.

5. From the drop-down box select the Query type: **SELECT**.

6. Press the **Edit Query** button.

7. In the **Query Properties** dialog box, from the Tables drop-down box (in the Select tab) select the table you want.

8. From the Available Fields list box select the fields you want to use in the table and click **Add**. Click **OK**.

9. Click in the cell that will hold the data. From the menu select **Dynamic Page > Insert Dynamic Element...**

10. Double-click the element to insert it.

11. While the **Dynamic Elements** dialog box is still open, click anywhere on the page that you want to insert the other elements and insert them. Click **Close**.

Database Query Functions

Query functions are used to access the database records. Almost all access to databases is done through queries. For example: reading a record from the database is done with a query command.

This can be done in a dynamic page. Open the dynamic page, in the Logical tree, insert or add the command Query where you want to execute a query to the database. The program inserts a Query action item in the logical tree.

Double-click on this Query action item. The Query dialog box opens. It lists the specific query actions you can perform. These include: Select, Insert, Delete, and Update.

Choose one of the options for example "Update" and set the table names, field names or other details. Click **OK**. It inserts these into the Query action item.

When this dynamic page is called by the browser, the Query action item is executed at the proper sequence in a top to bottom execution list, and the access or update to the database is done.

You can use a Query to read one record from a database or many records. In the case of many records, right-click on the Query action items in the

Manager window of the Dynamic Page Editor, and select **Record Set**. It inserts the Record Set action item as a subset to the Query action item. This forces the program to access a record and execute the actions you list below on in the loop of the Record Set, then it accesses the next record in the database, and executes the actions again. This loop continues till the end of the specified table, unless you insert other conditions which you can specify in the Query dialog box.

Example:

If you insert a Feedback Section command inside the Query loop, and if the database has three records, then when this dynamic page and its Query is executed, the browser page will show three tables, one after the other, one for each record. If you have inserted other action items in the same loop, then those results will be displayed in sequence along with the three tables.

Why Are Queries Needed?

You can use queries to find, retrieve, update, delete, analyze, or perform calculations on the data you want from the entire database. You can also use them as the source of records for forms, and reports.

What Types of Queries Are There?

Delete: Deletes one or more records from a database.

Insert: Adds a new record to a specified field of a database table.

Select: The most common type of queries is the select query. It retrieves data from one or more tables by using criteria you specify and then displays it in the order that you want.

Update: Updates the records you want in a database.

Besides these query types, eXtendia enables you to create more customized queries by creating dynamic objects (See the section on dynamic components in the first chapter).

What an Embedded Query Is All About?

Embedded queries are used to create database driven tables or bring dynamic contents into drop-down (combo) boxes. You can create embedded queries only in a dynamic page's feedback section.

Note to all upgrade users or who have used previous versions of this program: The Embedded Query solution of eXtendia is more powerful than the methods used in the older versions. It is recommended that you read the sections on how to create an embedded query and embedded queries' advantages to learn more about these new features.

How to Create an Embedded Query

The following steps explain how an embedded query is implemented in a dynamic page:

1. Select **File > New.** The New dialog box appears. Double-click on the big X to create an empty Web project.

2. In the Site Manager window create a folder in the root directory and call it "Databases".

3. Select this folder and select **Physical Layout > Import Database...**

4. Browse and point to the database you want to build the query on and click **Open**. This example will use a database called **ShopDB.mdb** (i.e. the E-Commerce database of one of the program's ESGs or templates provided, which you have installed during the installation of eXtendia. Otherwise open the ESG file (CNQ) from the program folder or the program CD). In general, you can use any database you want as long as you convert it to MS Access format (with an .MDB extension) and add or insert at least one table with fields and records.

5. Now go back to the root folder of your Web application and press **CTRL+D** to create an empty dynamic page. Call it "**SmpQry**" or any name you want.

6. To edit **SmpQry** double-click on its icon. The Dynamic Page Editor appears.

7. Right-click on the **ROOT** and select **Add Into > Feedback Section**. Click on the Feedback Section Icon in the tree view. The grid in the right pane will be replaced by a blank white page.

8. Click in the blank page and select **Insert > Banner.**

9. To give this page a more meaningful name than SmpQry, click on **>>**. Right-click on the SmpQry icon and from the pop-up menu select **Resource Properties...**

10. In the Properties dialog box check the **Alias** checkbox and replace the textbox content with **Sample Query**. Click **OK**. Note that the banner text is updated now. The alias name is used by eXtendia to create

page banner or navbar text.

11. Select **Table > Insert Table**. The Table Properties dialog box appears.

12. For the Header Rows insert the value **1** and select the Pixels radio button for the Width. Click **OK**.

13. The created table should have two rows and two columns. The upper row represents the header row. Anything you enter here will exactly appear in your dynamic page as the header row of your table. Leave it blank at this time.

14. It is time to create the embedded query. Click outside of the table to exit the table edit mode. Click on the table to select it. Select **Format > Object > Query Wizard...** from the menu,or right-click on the table and from the pop-up menu choose **Object > Query Wizard...** The "Choose Data Source for New Query" dialog box appears.

15. Double-click on the Databases folder in the explorer section and select the database file you want to create the query on. Leave the Query Type as SELECT and click **Edit Query**. The Query Properties dialog box appears.

16. In the Select tab, click and open the Tables drop-down box and select the table you want to retrieve data from. The fields available in that table appear in the Available Fields list box.

17. Select the fields you want and click **Add >** or double-click it to insert it to the Selected Fields list box. In our example we have selected the ProductName and UnitPrice fields from the Product table. Click **OK**.

18. Click inside the leftmost cell in the header row (i.e. the upper one in the table) until you see the blinking cursor. Type in "Product Name" and "Price" in the header cells successively.

19. Select **Dynamic Page > Insert Dynamic Element...** The Dynamic Elements dialog box appears (Figure 2.4).

20. With the Dynamic Elements dialog box open, click inside the body cell where you want to insert the dynamic element. You will see the blinking cursor. Turn back to the Dynamic Elements dialog box and select the field you want to include in the selected cell. In our example we have selected **Query_1.Products.ProductName**. Click **Insert**.

21. Repeat the last action for the other cell(s) and click the **Close** button.

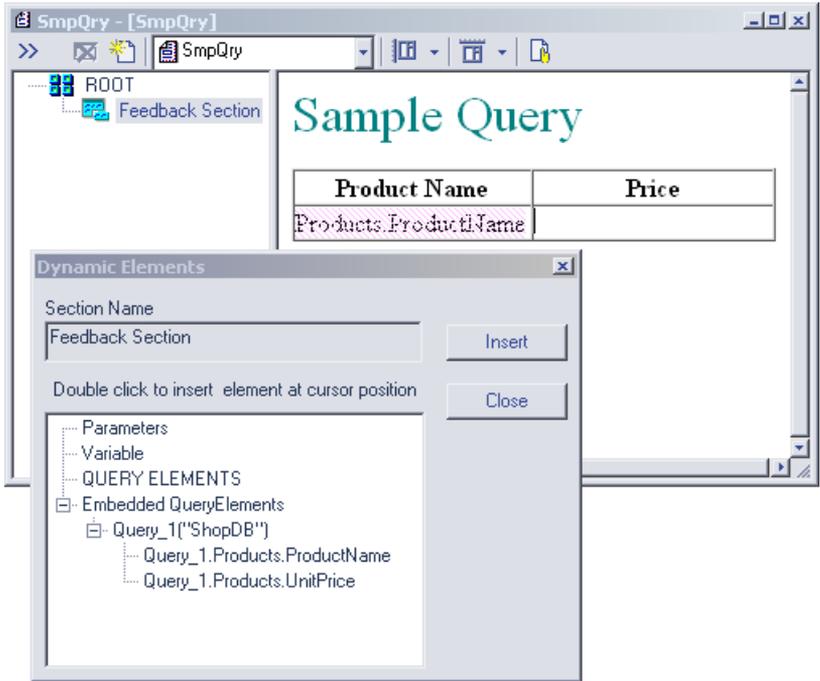22. You are ready to preview the dynamic page you have created. Gener-

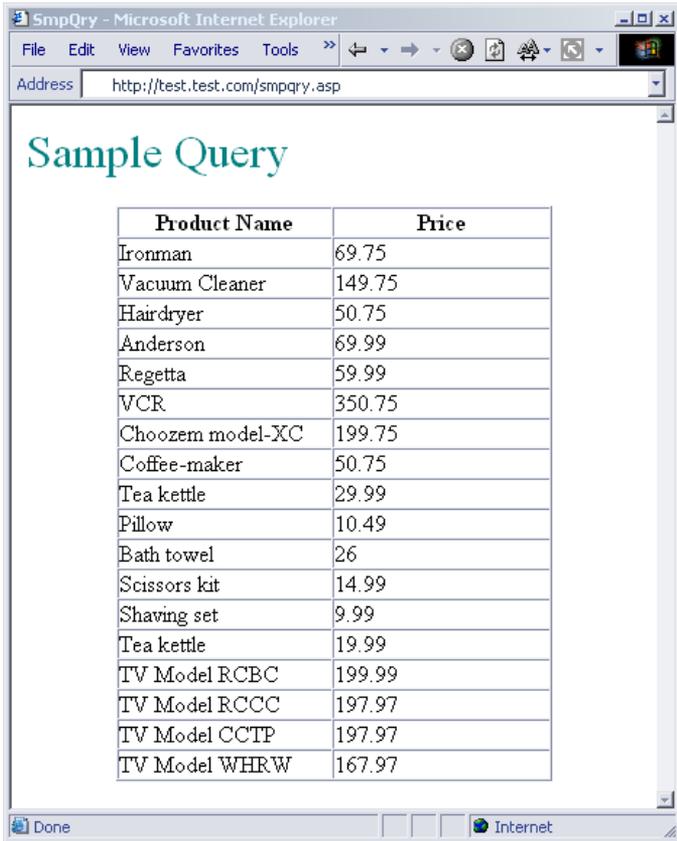Figure 2.4 The Insert Dynamic Elements dialog box

ate your Web application by pressing **F8** to your Web server, and preview your dynamic page as usual, using an Internet browser (not the built-in Site Preview function) through the HTTP protocol.

If you have followed the explanations carefully, then the resultant page will be similar to the one in Figure 2.5.

Embedded Queries' Advantages

In the previous versions of the program, if you had checked the "Repeat the whole section for each feedback record" option in the Advanced Web Operations dialog box (Dynamic Properties tab: Figure 2.8), then the page displayed on the browser would have three separate tables one for each record.

Such earlier versions had difficulty handling Feedback Section results where the Form and the table were in one another. eXtendia gives more flexibility and generates more accurate layout of information. In eXtendia the Dynamic Properties is not needed and is not available. The same results are obtained by using the Embedded Query options.

Figure 2.5 The result of the Sample Query page

To do this insert a Feedback Section in the Dynamic Page Logical tree anywhere you want.

Select it and build in it the table, as you want it.

Select the table, then select **Format > Object > Query Wizard...** from the menu, or right-click on the table and from the pop-up menu choose **Object > Query Wizard...**

This designates it as an Embedded Query.

Embedded queries are executed each time the Feedback Section including them is executed.

This gets the information from the database, and places it on the Web page in one table, with one header and footer (optional) and with rows that

include and match the records received from the database. The table will be followed by the Feedback section elements (if any).

The Embedded Query feature makes creating nested database driven tables easy by simplifying the algorithm of their dynamic tree.

Custom Report Layouts

The common method of displaying embedded query results in a data-driven table is one record per row. However, eXtendia allows you to display multiple records in a single row.

1. Create a table with multiple columns, and insert an embedded query into it. See the section on Embedded Queries in this chapter.

2. Insert one or more dynamic elements that the query returns in the first cell.

3. Repeat step 2 for the other cells in the table.

4. Select the table, right-click on it and select **Object > Query Wizard…**

5. From the Query Properties dialog box go to the Feedback tab and select **All records** from the Page size section.
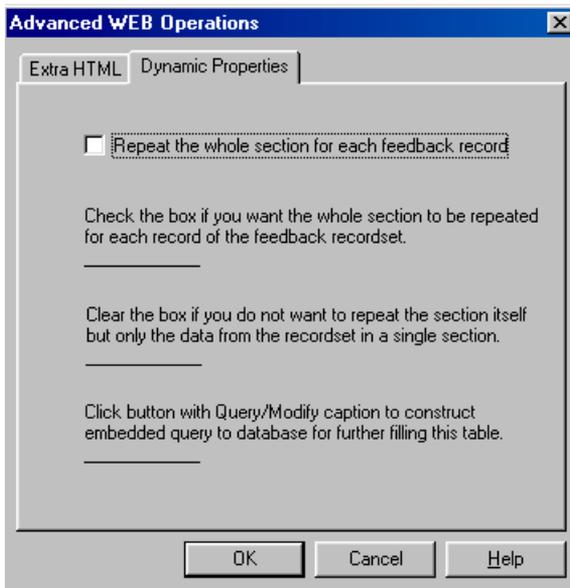
Figure 2.6 The Advanced Web Operations Dialog Box: The Dynamic Properties Tab
Exists Only in WebShop
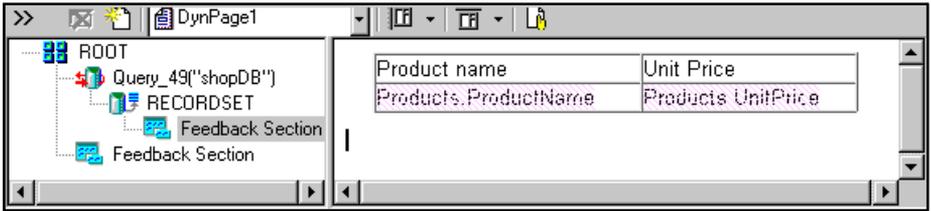
Figure 2.7 The Dynamic Tree of a Database Driven Table in WebShop

6.   Check the checkbox named "Check to enter columns number in a row". A spin box appears. Set its value to the table columns' number.

When you generate your Web application and load the dynamic page, the query will return a table with the corresponding number of columns in a row and one record in each cell.

Figure 2.8 Repeat the Whole Section Checked in WebShop

Chapter 3.
Converting Databases

Introduction

eXtendia enables you to convert your existing databases to another database format. Using the Database Conversion feature of the program, you can:

- Convert an MS Access database to a database structure of MS SQL, MySQL, or Oracle.
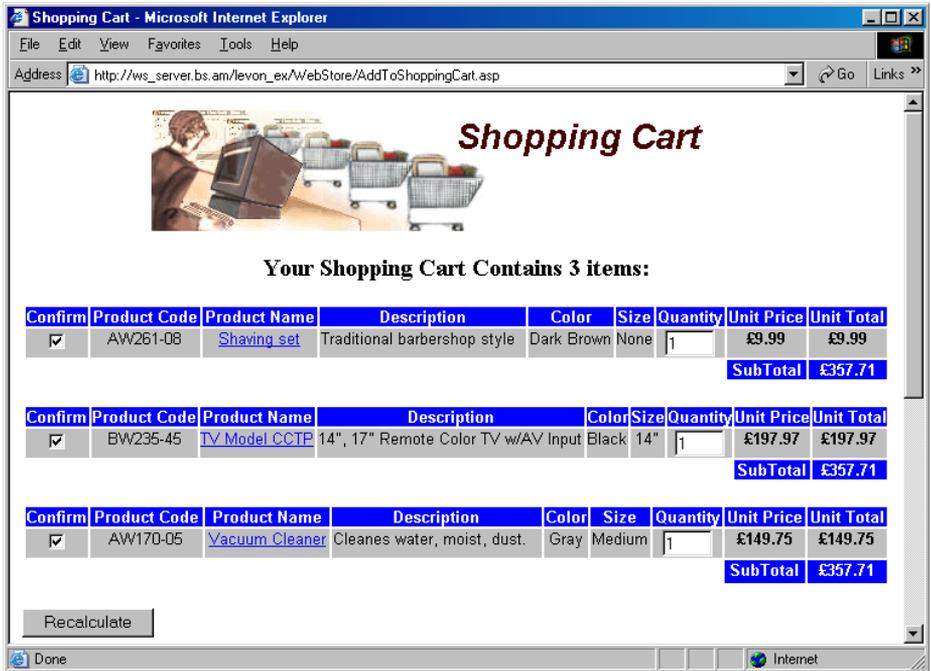
- Convert database structures of MS SQL, MySQL, or Oracle to an MS Access database.

Database Conversion from MS Access to MS SQL, MySQL, or Oracle

You can convert databases when you generate or publish your eXtendia Web project. To convert an MS Access database to a database structure of MS SQL, MySQL, or Oracle, you must have that Access database already imported into your eXtendia Web project.

In order to be able to convert your MS Access database to MS SQL Server, MySQL, or Oracle, the following requirements are necessary:

- The Client computer must have a standard Windows configuration.

- A Web server must be installed and running on the Server computer.

- To convert an MS Access database to an Oracle database structure, you need Oracle Client installed on your system (for ASP type of Dynamic pages).

- To convert an MS Access database to a MySQL database structure,

the MySQL ODBC driver must be installed on your system (for ASP Dynamic pages). The MySQL ODBC driver can be downloaded from www.mysql.com.

• If your Web site uses JSP Dynamic pages, the appropriate JDBC drivers must be installed on your system.

The following example demonstrates how to convert the MS Access database of your Web project to the database structure of MS SQL Server, MySQL, or Oracle:

1. Select **File > New** to start a Web project.

2. Go to the **Site Manager > Physical Layout**.

3. Choose a folder location where you want to create (or import) the database resource, right-click on it, and select **Import Database...** from the pop-up menu.

4. In the Database & Provider Type drop-down list, select **MS Access** and click **OK**. The Open dialog box appears.

5. Select the Access file you want to import and click **Open**. The database resource appears in the Physical Layout.

6. Select **File > Generate Site**.

7. Select the Advanced option and click **Next**.

8. Select the platform and the language for site generation scripts and click **Next**.

9. From the tree of Web resources (files), select the database you want to generate.

10. Click **Next**.

11. From the Databases Generation Mode step of the wizard, select the appropriate database name and double-click on it. The Database Connection dialog box appears. Select the database type you want to generate. For MS SQL Server, select either MS SQL Server or MS SQL (ODBC). For Oracle, select either Oracle SQL Server or Oracle SQL Server (ODBC). Select MySQL Server for MySQL.

12. Enter the appropriate information in the dialog box fields. When done, click **Next**.

13. Select the folder destination for your Web site and click **Next** to generate (publish) your site.

14. Once your Web site is generated (published), run the .HTM file that

contains the database generation scripts. This file adopts the name of the database resource. For example, if the MS Access database of your Web is 'sample.mdb', the database generation scripts are saved as 'sample.htm' and 'sample.asp' or 'sample.jsp' files.

Database Conversion from MS SQL, MySQL, or Oracle to MS Access

You can convert databases when you generate or publish your eXtendia Web project.

To convert the database structure of MS SQL, MySQL, or Oracle to an MS Access database, the following requirements are necessary:

- The Client computer must have a standard Windows configuration.

- To convert an Oracle database structure to an MS Access database, you need Oracle Client installed on your system.

- To convert a MySQL database structure to an MS Access database, the MySQL ODBC driver must be installed on your system. The MySQL ODBC driver can be downloaded from www.mysql.com.

  Note: To see how eXtendia converts data types while converting databases to other types, refer to Appendix B "Data Type Conversions."

The following example demonstrates how to convert an MS SQL, MySQL, or Oracle database structure of your Web project to an MS Access database:

1. Select **File > New** to start a Web project.
2. Go to the **Site Manager > Physical Layout**.
3. Choose a folder location where you want to create (or import) the database resource, right-click on it, and select Import Database... from the pop-up menu.
4. In the Database & Provider Type drop-down list, select Microsoft Access and click **OK**. The Open dialog box appears.
5. Select the Access file you want to import and click **Open**. The database resource appears in the Physical Layout.
6. Select **File > Generate Site**.
7. Select the Simple option and click **Next**.

8. From the tree of Web resources (files), select the database you want to generate.

9. Click **Next**.

10. Select the folder destination for your Web site and click **Next** to generate (publish) your site. Database conversion occurs during the generating process.

11. Once your Web site is generated (published), your newly created MS Access database appears in the designated folder.

Chapter 4.
Server Related Topics

Introduction

The sites you create using eXtendia v10.10 should be placed to run on ASP or JSP v1.1 compatible Web servers.

Microsoft IIS (Internet Information Server) versions 3.0 and higher are 100% compatible with ASP (Active Server Pages) technology. Most large companies have Windows 2000 or NT servers and which include ASP components.

To host with Boomerang Software hosting service or to read more on Web hosting services go to:
https://www.BoomerangSoftware.com/Webhosting/webhosting.htm

When you publish your Web-based application or site, eXtendia creates a file called "**For System Administrator.txt**" and places it at the root folder of your site. This file guides your server administrator through the necessary steps to properly set up folders or permission or whatever is needed to run your eXtendia site. Please make sure that the administrator reads and performs the tasks outlined in the file.

Server Requirements

For ASP Server Side Script Applications:

The server computer where the ASP based Web application should reside must meet the following requirements:

- Any ASP compliant Web server

- Oracle client (for working with Oracle Server)

- MDAC 2.7 (for working with MS SQL)

- Server components from Boomerang Software (for file upload and sendmail features)

For JSP Server Side Script Applications:

The server computer where the JSP based Web application should reside must meet the following requirements:

- JDK (Java Development Kit) 1.3 from Sun Microsystems

- Any JSP 1.1 Compliant Web Server

- An appropriate JDBC driver compatible with the Web Server's operating system (for example sun.jdbc.odbc.JdbcOdbcDriver from Sun Microsystems, included in JDK)

- Oracle Client or Oracle thin driver setup properly on the Web Server computer (for working with Oracle Server)

- Server components from Boomerang Software (for file upload and sendmail features)

The Web applications created by eXtendia were successfully tested on following systems:

For ASP Server Side Script Applications:

OS: Windows NT 4, 2000, XP

Web Server: IIS 4.0, 5.0

Database: MS Access 97, 2000, XP (direct or ODBC)

                    MS SQL Server 7.0, 2000 (direct or ODBC)

                    Oracle Server 8.1i

For JSP Server Side Script Applications:

OS: Windows NT 4, 2000, Linux Mandrake 8.0

Web Server: Apache Tomcat 3.3.1, IBM Web Sphere 4.0, Allaire JRun 3.0

Database: MS Access 97, 2000, XP (direct or ODBC)

                    MS SQL Server 7.0, 2000 (direct or ODBC) (Linux and Windows)

                    Oracle Server 8.1i (Linux and Windows)

Installing Proper COM Objects on the Server

The Microsoft ASP technology uses COM (Component Object Model) objects, which are installed on your server along with the IIS. ASP pages created by eXtendia use additional COM objects to perform other vital tasks. Without these, your site will not be able to send email messages to you and your customer upon receiving an order. In addition the upload features will not work properly. These COM objects are developed by Boomerang Software and are available for download from www.BoomerangSoftware.com.

The "For System Administrator.txt" file guides your server administrator and shows the steps necessary to perform proper COM objects installation on the server.

Installing Java Class Files on the Web Server

If you want to generate and publish a JSP based Web application, you must ask your hosting service provider to download Java Class Files from www.BoomerangSoftware.com and install them on the Web server. These files are necessary for your Web application's proper functioning. Ask your server administrator to read instructions in "**For System Administrator.txt**" file which is generated with your site and installed in your site folder.

Working with a Remote Oracle Server

In case the site application you developed with eXtendia needs to work with an Oracle or MS SQL server located on another server, you must contact your server System Administrator to enable certain settings.

To do this, the System Administrator must have the Oracle Client Network Libraries for Oracle and MDAC (Microsoft Data Access Components) for MS SQL, installed on the server and register a TNS. He must set the Database Name to the appropriate Net8 connect string which is the alias in the **tnsnames.ora** file. For more information on Net8, refer to Net8 Administrator's Guide.
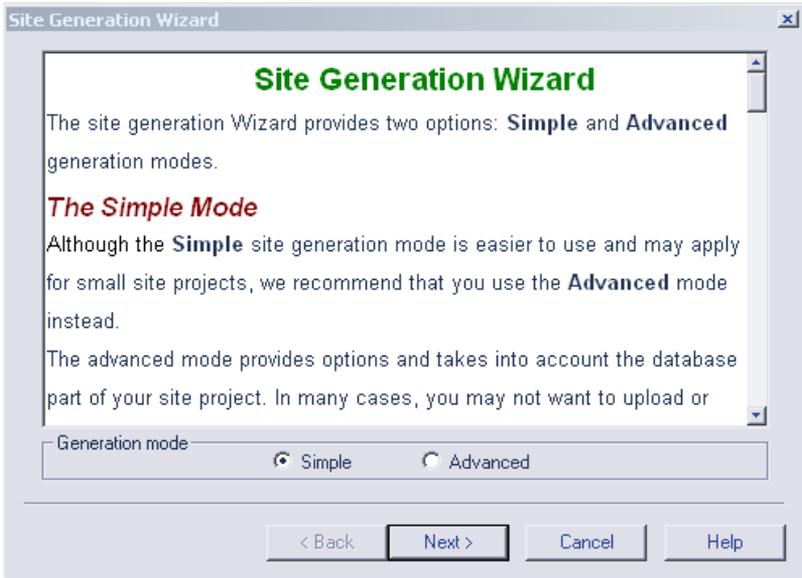
Figure 4.1 The Site Generation Wizard - Choose the generation mode

Site Generation and Site Publish Wizard

eXtendia enables a company to build and deploy very large site or server projects. When sites get large, the need to publish or upload to the server only specific pages, or updated parts of the site becomes very important. eXtendia provides extensive options that simplify this process. You can specify exactly what you want to publish or upload. This is done through a set of wizards where you make your selections. The Wizards list the complete resources of your site project. You can select the ones that you want to generate and publish. The "**+**", "**-**" boxes expand or collapse groups of resources.

To generate and publish specific parts of your site project, select **File > Generate Site** or **File > Publish/Upload Site.** The site generation Wizard provides two options:

Simple and **Advanced** generation modes.

The Simple Mode

Although the **Simple** site generation mode (Figure 3.2) is easier to use and may apply for small site projects, we recommend that you use the **Advanced** mode instead. The advanced mode provides options and takes into account the database part of your site project. In many cases, you
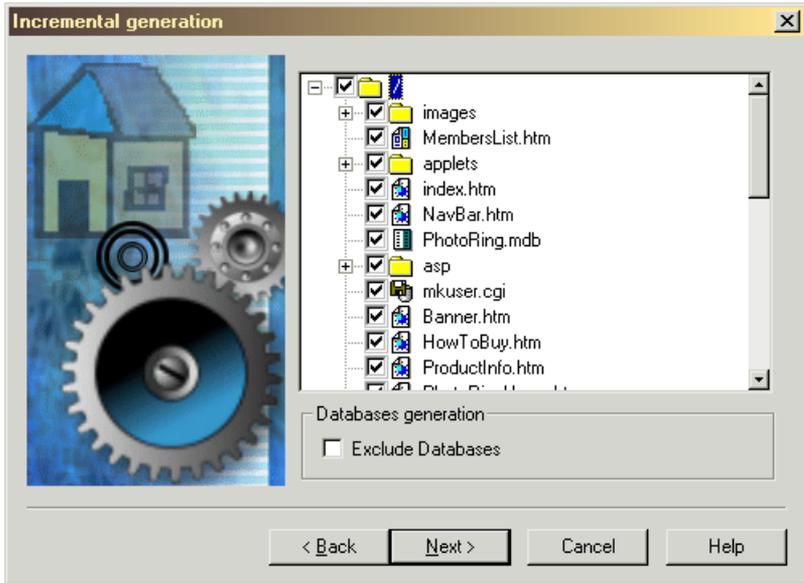
Figure 4.2 Site Generation Wizard - The Simple Mode

may not want to upload or publish the database of your site and avoid overwriting the database of your site on the server.

The **Simple** mode enables you to perform **Incremental Generation**. This implies that you should generate or publish only those files that have changed since you did the last generation. The changed files are listed in the site resources tree in the Incremental generation wizard. You can select to generate some of the files over again, or, uncheck and exclude certain files. Check the "Exclude Databases" check box if you want to generate databases later.

The Incremental generation is available during one eXtendia session, and provided that you generate or publish the site or Web-application in the same folder. Otherwise the Incremental generation will be disabled automatically.

Note: When you perform a Site Generate or Publish function, eXtendia creates a file called "For System Administrator.txt". Notify the site System Administrator to read this file and follow the instructions.

Once the System Administrator confirms that all of the necessary operations and server settings regarding the databases of your site are completed, you can then start using the site or Web-application.

Figure 4.3 Site Generation Wizard - Generation Options

The Advanced Mode

The Advanced site generation mode is particularly useful when your site uses powerful databases such as Oracle Server, MS SQL Server, or MS Access through ODBC. Other sections of this User Guide explain how you can use such databases.

In addition, it enables you to place your databases outside your Web site resources folder on the host, to provide **a higher level of security for the data**.

To start the Advanced Generation Mode

1. Select the **Advanced** generation mode in the Site Generation Wizard window (figure 3.1). Click **Next** and the **Generation Options** dialog box appears (figure 3.3).

2. Select the Web Server's operation system and the scripting language and click **Next**.

    Note: When you select UNIX as the OS platform the scripting language option is automatically set to JSP.

3. The Incremental Generation dialog box appears. Choose the files that you want to generate and click **Next**.
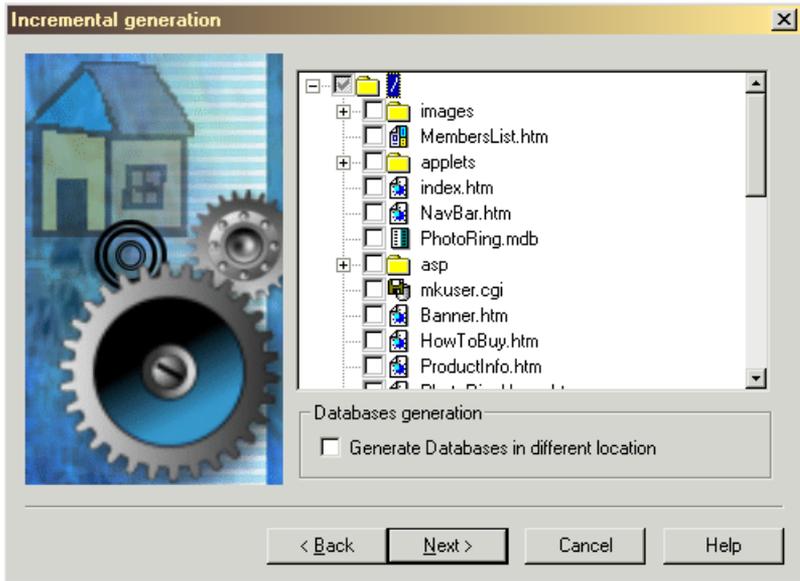
Figure 4.4 Site Generation Wizard - The Advanced Mode

Note: If you want to generate your site without generating or publishing databases, you may uncheck the checkbox beside the database name in the Incremental Generation dialog box. In this case you will not need to follow the steps described below.

4. If you have databases in your site project the **Databases Generation Mode** dialog box appears. Your databases will be listed.

    If you don't have databases to be generated, then the wizard automatically skips to the next **Browse Destination Folder** dialog box or the **Publish/Upload Site** dialog box.

5. Find out which database provider is available (i.e. MS SQL, Oracle, MySQL) on your Web application's host computer. Select an appropriate database type in the Database Type drop-down box. Ask your Web application's host System Administrator to register as many Data Source Names as needed to correspond to the number of databases that you have.

6. Select the database and click **Connect...** The Database Connection dialog box appears. Insert the necessary information asked in the form. Click **OK**.

    If you are generating JSP scripts you will need to insert the database connectivity driver and the connection string, too.

The Connection String, sometimes refered to as URL, contains JDBC driver specific details necessary to enable your dynamic page to connect to your database server.

Example:

If your Web server system administrator has registered a DSN and called it "**DSN_NAME**", and the JDBC driver available on your host server is **sun.jdbc.odbc.JdbcOdbcDriver**, you have to enter **sun.jdbc.odbc.JdbcOdbcDriver** in the Driver field, and **jdbc:odbc:DSN_NAME** in the Connection String field.

Note: If you have encountered any problems at this phase, contact your Web server system administrator.

7. The **Browse Destination Folder** dialog box is displayed. Type in the path for your application's resource files and click **Next**.

8. The wizard indicates that was successfully generated. Click **Finish** to close the wizard window.

9. A text file named "For System Administrator.txt" is created and placed in your destination folder. Notify your site System Administrator to read this file and follow the instructions. It contains important information about setting your databases properly.

10. Once the System Administrator confirms that all necessary operations and server permissions for your databases are completed, you can start using your Web application.

Generate Databases in Different Locations

The previous section describes how you can generate or publish all or part of your site or Web-based application to the server. If you choose to generate or publish the database as well, it will be placed in the site's destination folder.

However, if you selected to place your database or use a database which is in a different area on the server, then check "Generate databases in different location" check box. This will generate or upload your databases in a special folder. The special instruction file "For System Administrator.txt" will also be placed in that folder.

Now you can generate your site. Remember that if you choose this feature you must have two FTP folders to generate the database(s) in a different location, otherwise you may create a subfolder with a unique name in your FTP site folder and use them both. This helps the System Administrator of the server to easily separate and exclude all temporary database related files.

Appendix A.
License Agreement and Warranty

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Opening the software package and using eXtendia indicates acceptance of the terms of this License Agreement.

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Appendix B.
Data Type Conversions

While converting a database to other formats, eXtendia performs the following data type conversions:

Converting an Oracle Database to MS Access

Oracle8i	MS Access 2000
float	Double
rowid	ReplicationID
char	(length<=255)Text else Memo
varchar2	(length<=255)Text else Memo
long	Memo
number	Decimal
raw	Binary
mlslabel	Binary
long raw	Binary
blob	Binary
clob	Binary
nclob	Binary
bfile	Binary

Note:

- MS Access does not support triggers.

- Oracle indexes and primary keys are converted to Access indexes and primary keys.

- Oracle foreign keys are converted to Access foreign keys, which means the database structure remains unchanged.

Converting an MS SQL Database to MS Access

MS SQL Server 7.0	MS Access 2000
char	*(length<=255)Text else Memo*
nchar	*(length<=255)Text else Memo*

varchar	*(length<=255)Text else Memo*
nvarchar	*(length<=255)Text else Memo*
text	*Memo*
ntext	*Memo*
binary	*Binary*
varbinary	*Binary*
image	*Binary*
timestamp	*Binary*
money	*Currency*
smallmoney	*Currency*
bit	*Boolean*
tinyint	*Byte*
smallint	*Integer*
int	*Long Integer*
bigint	*Decimal*
float	*Single*
real	*Double*
decimal	*Decimal*
numeric	*Decimal*
uniqueidentifier	*ReplicationID*
datetime	*DateTime*
smalldatetime	*DateTime*

Note:

- The *Auto Number* field of Access converts to the *int(identity)* data type of MS SQL Server.

- Access indexes and primary keys are converted to MS SQL Server indexes and primary keys.

- Access foreign keys are converted to MS SQL Server foreign keys, which means the logical structure of the Access database remains unchanged.

Converting a MySQL Database to MS Access

MySQL 3.23	*MS Access 2000*
tinyint	*Byte*
smallint	*Integer*
mediumint	*Long Integer*
int	*Long Integer*
bigint	*Decimal*
real	*Double*
float	*Single*
double	*Double*
numeric	*Decimal*
decimal	*Decimal*

date	*DateTime*
dateTime	*DateTime*
bit	*DateTime*
timestamp	*DateTime*
time	*DateTime*
year	*Long Integer*
char	*Text*
bit	*Byte*
bool	*Byte*
varchar	*Text*
tinytext	*Memo*
tinyblob	*Binary*
text	*Binary*
blob	*Binary*
smalltext	*Memo*
smallblob	*Binary*
longtext	*Memo*
longblob	*Binary*
enum	*Memo*
set	*Memo*

Note:

- The *int auto_increment* data field type of MySQL is converted to the *Auto Number* field of Access.

- MySQL indexes and primary keys are converted to Access indexes and primary keys.

Converting an MS Access Database to Oracle

MS Access 2000	*Oracle 8i*
Text	*varchar2*
Memo	*varchar2(2000)*
Byte	*number(3)*
Integer	*number(5)*
Long Integer	*number(10)*
Single	*number*
Double	*number*
ReplicationID	*rawid*
Decimal	*number*
DateTime	*date*
Currency	*number(19,2)*
AutoNumber	*number(10)*
Boolean	*char(3)*
Ole Object	————
Hyperlink	*raw*
Binary	*raw*

Note:

- As Oracle has no data field type for *autonumbering,* eXtendia generates sequences and triggers for emulating auto incrementing.

- Access indexes and primary keys are converted to Oracle indexes and primary keys.

- Access foreign keys are converted to Oracle foreign keys, which means the logical structure of the Access database remains unchanged.

Converting an MS Access Database to MySQL

MS Access 2000	*MySQL 3.23*
Text	*varchar*
Memo	*text*
Byte	*tinyint*
Integer	*smallint*
Long Integer	*int*
Single	*float*
Double	*double*
ReplicationID	*int*
Decimal	*decimal*
DateTime	*date*
Currency	*decimal(10,2)*
AutoNumber	*int (auto_increment)*
Boolean	*bool*
Ole Object	*————*
Hyperlink	*blob*
Binary	*vblob*

Note:

- The *Auto Number* field of Access converts to the *int(auto_increment)* data type of MySQL.

- Access indexes and primary keys are converted to MySQL indexes and primary keys.

- Current versions of MySQL do not fully support foreign keys.

Converting an MS Access Database to MS SQL

MS Access 2000	*MS SQL Server 7.0*
Text	*nvarchar*
Memo	*nvarchar(4000)*
Byte	*tinyint*

Integer	*smallint*
Long Integer	*int*
Single	*real*
Double	*float*
ReplicationID	*uniqueidentifier*
Decimal	*decimal*
Date Time	*DateTime*
Currency	*money*
AutoNumber	*int(identity)*
Boolean	*bit*
Ole Object	————
Hyperlink	*varbinary*
Binary	*varbinary*

Note:

- The *Auto Number* field of Access converts to the *int(identity)* data type of MS SQL Server.

- Access indexes and primary keys are converted to MS SQL Server indexes and primary keys.

- Access foreign keys are converted to MS SQL Server foreign keys, which means the logical structure of the Access database remains unchanged.

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