

LESSON 3

Introduction to Database Connections

OBJECTIVES

You will be able to:

- describe the basic interaction between databases and Web pages.
- identify the benefits and considerations of using databases with your Web site.
- use the Database Results Wizard to connect a database to a FrontPage Web.

In this lesson, you will learn the basics of connecting a database to a Web site using FrontPage. Some of the technologies involved in connecting a database are covered, particularly those that FrontPage uses. Finally, you will learn how to use the Database Results Wizard to quickly connect a database.

Database Connectivity

Have you ever wondered how Web sites create all those interactive features, such as having a catalog of products that can be sorted? The answer for many of these sites is to use a Web server to connect to a database. These Web applications can be very sophisticated and often require extensive programming. We certainly cannot cover all aspects of database connectivity here, but in this lesson we will look at some of the basics and how FrontPage handles databases. We will create only a very simple database connection, but it should help to get you started in understanding the process.

Overview of Web Database Applications

There are all sorts of database applications on the Internet. Frequently companies have large storehouses of information that would be useful to share with customers, vendors, suppliers, etc. Some applications allow you to simply view a list of database items, while others do sophisticated calculations on the data. Just a few examples include:

1. Tracking of packages online (<http://www.fedex.com> or <http://www.ups.com>)
2. Databases of products for sale (<http://www.cdnw.com> or <http://www.amazon.com>)
3. Online banking (<http://www.sfnb.com> or <http://www.wingspanbank.com>)

Although many of these examples are large institutions, there are many uses on a smaller scale for making information available to others. A restaurant might put menu items or recipes in a database for customers to search. A company can make customer information available on the corporate intranet for searching or you might store all your friends and families phone numbers in a database making it available to them.

A few of the benefits of a database-centered Web site include:

1. No manual translation or conversion of data for Web presentation – manual conversion brings up many issues, such as synchronizing the information.
2. Real-time access to information, allowing users access to the most current information.
3. Additional functionality for users by allowing them to customize the information (within limits, of course) and in some cases adding to the information provided they have secure access.

A few things to consider before connecting to a database include:

1. Database connectivity requires many more resources, both software and programmers, which translates into more expense.
2. If you are providing sensitive information, you have a whole new layer of security to add to your site.
3. The more sophisticated your site, the harder it is to troubleshoot when something goes wrong.

Whatever the application, there are a few basic things to know about connecting to the database.

What Do You Use to Connect to a Database?

One of the most confusing aspects of connecting to a database is just figuring out what all the parts are and how they fit together. This being a FrontPage class, we will mainly stick to what is needed for FrontPage to connect to a database.

The first item, of course, is a database. The database format can vary, but you could use Excel for spreadsheet data, Access for small to mid-sized databases, or SQL Server or Sybase for large projects.

FrontPage will connect to your database using Open Database Connectivity (ODBC), a standard way of connecting to a database used by many applications. Virtually all modern databases support ODBC. However, you need to ensure that you have the necessary ODBC drivers for your database. A driver is simply a small piece of software that allows one program to “talk” to another program or device. This is normally not a problem because Windows 95/98/2002 and Windows NT come with many ODBC drivers (you can check which ones are installed and administer them by going into Control Panel and opening ODBC Data Sources).

Finally, you need a Web server that is able to take the input data and format it for the Web. FrontPage accomplishes this feat using Active Server Pages (ASP). This topic is covered further in the next section, but if you use FrontPage for database connectivity your Web server must be able to process ASP. Not surprisingly, Microsoft’s Internet Information Server can be used, but there are others as well. For our purposes, we will use Personal Web Server 4.0 that comes with Windows 98. If you plan on creating a database application, you will definitely want to check with your Web presence provider about what Web server they are using, what technologies can be used with the server, and seek their recommendations about how to work with their equipment.

There are also many other items you may need for more sophisticated Web applications, such as CGI scripts, middleware for connecting to mainframes, or a transaction server for processing orders and payment.

Active Server Pages

What are Active Server Pages?

Microsoft's Active Server Pages (ASP) offer web developers a flexible and scalable method to interact with ODBC compliant databases for an Internet site or Intranet application.

Basically, ASP technology allows developers to place information into a database and have the Web server build the HTML page on-the-fly using the developer's instructions and, in some cases, the user's instructions. You may have noticed the .asp extension on pages at Microsoft's site. A simple example of ASP can be found on Microsoft's Developer Network site (<http://msdn.microsoft.com/default.asp>). You can customize the news you want to view. The next time you visit, instead of getting all the news, the page will be built using your selections. This kind of customization is not possible using standard HTML pages.

Although ASP can be very difficult to create and rely heavily on the server you are using, once everything is in place they can be viewed by virtually any browser. That is because the output of ASP is an HTML page.

How FrontPage Uses ASP

FrontPage uses ASP to take the data from your database and format it for presentation in a browser. FrontPage creates all the necessary ASP instructions. Most of the instructions involve taking the fields you have chosen to appear on your page and placing HTML tags around those fields. It does this by using a Wizard.

Creating Database Connections in FrontPage

Database Results Wizard

The Database Results Wizard walks you through the process of connecting your database. It sets up the communication with your ODBC data source and provides formatting options.


One convenient aspect of the Wizard is that it provides a sample database for you to preview in an Access format. When the Wizard is completed, it creates a folder in your Web called **fpdb** with the database file.

To begin the Wizard, you select **Database** from the **Insert** menu. Once you've run through the Wizard, you can edit the content it creates by double-clicking on designated areas within the resulting pages.



Exercise 3-1: Starting the Database Results Wizard

In this exercise, you will create a new Web and use the Database Results Wizard to create a connection to a sample database.

1. Close any open Webs or pages.
2. From the **New** button , click the down arrow then **Web...**
3. Select **Database Interface Wizard**, enter **database** as the name of the Web and click **OK**.

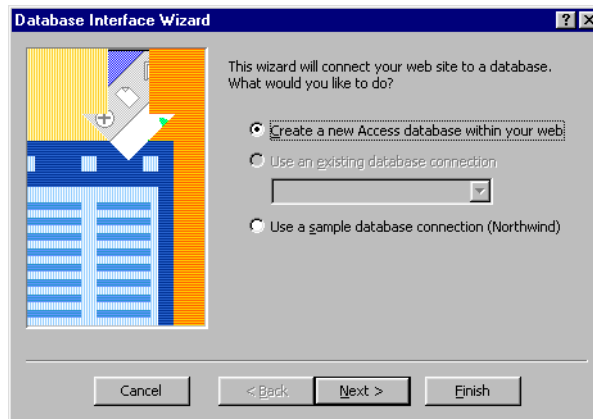


Figure 3-1: Step 1 of Database Results Wizard.

If you had your own database, you would use the first or second option.

4. Click on **Use a sample...** and click **Next**.

When you clicked Next it copied the sample database into your Web and set up the ODBC connection.

5. Click **Next** when prompted that the database has been created.

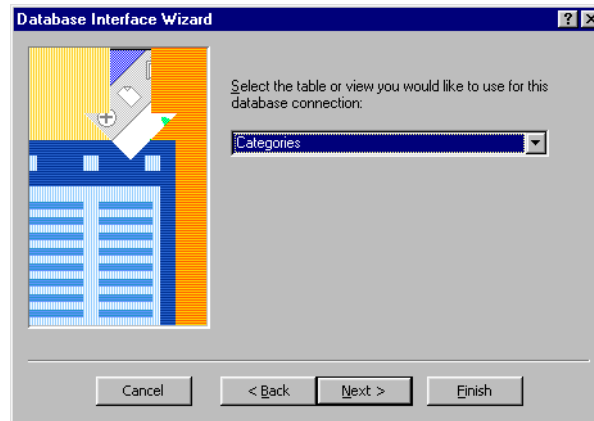


Figure 3-2: Step 2 of Database Results Wizard

Selecting a Record Source

The record source is what data you want your users to access. Do you want them to view a list of customers, employees, etc.? You can also choose to build your own SQL statement using the custom query option. SQL is beyond the scope of this course, but it is basically a method for extracting information from the database using specialized commands.



Exercise 3-2: Choosing the Record Source

In this exercise, you will select the record source for this Web application.

1. On the record source drop-down, select **Customers**.

This will access all the customer-related fields (customer tables).

2. Click **Next**.

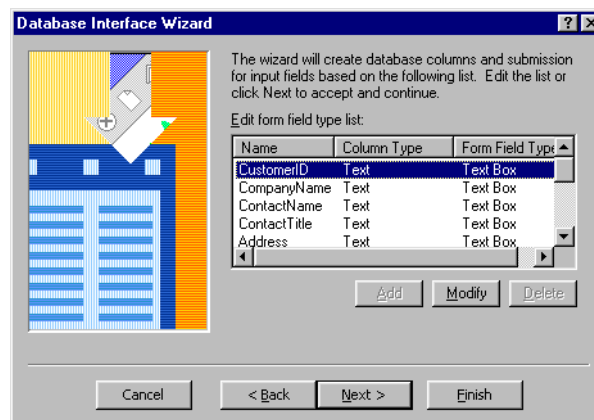


Figure 3-3: Step 3 of Database Results Wizard

Note the fields, which are the result of you selecting Customers in the previous step.

3. Click **Next** to accept all of fields (we'll edit them later).

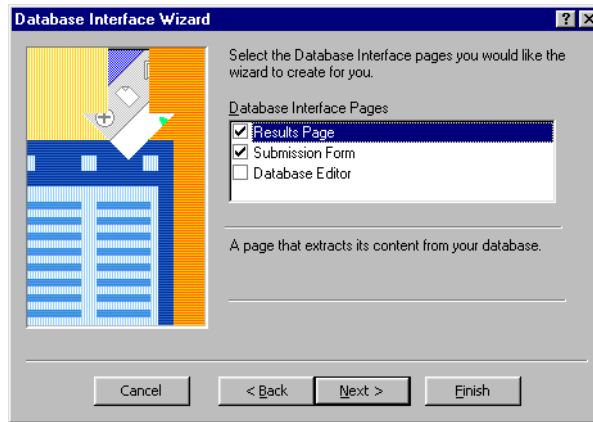


Figure 3-4: Step 4 of Database Results Wizard

Database Interface Pages

There are three pages you can have the Wizard create for you:

- Results Page – All of the records in the database displayed in tables, allowing users to browse through the database a few lines at a time (first page, last page, back and next buttons are provided).
- Submission Form – Page used by anyone who will be submitting records to the database. Users fill out the form information and submit them to add new records.
- Database Editor – Combines the functionality of the Results and Submission Form pages onto one page and gives you the option of password protecting the page to limit access.



Exercise 3-3: Choosing the Interface Pages

In this exercise, you will select the pages that will interface with the database.

1. Select all three interface pages.
2. Click **Next**.

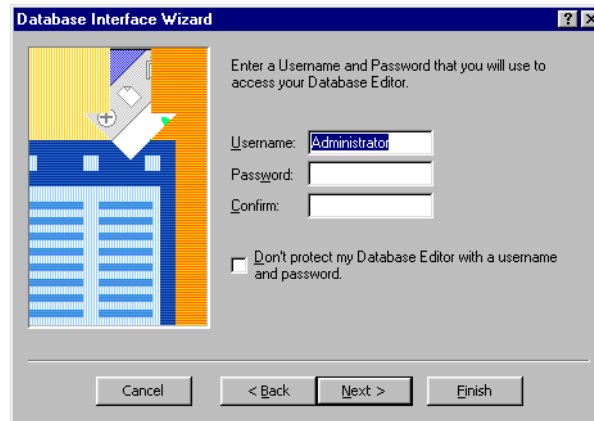


Figure 3-5: Administrator Rights

3. Click on **Don't protect my Database Editor...**

Normally, you'll probably want to protect it with a password, but we'll make it easy on ourselves for now.

4. Click **Next**.
5. Click **Finish**.

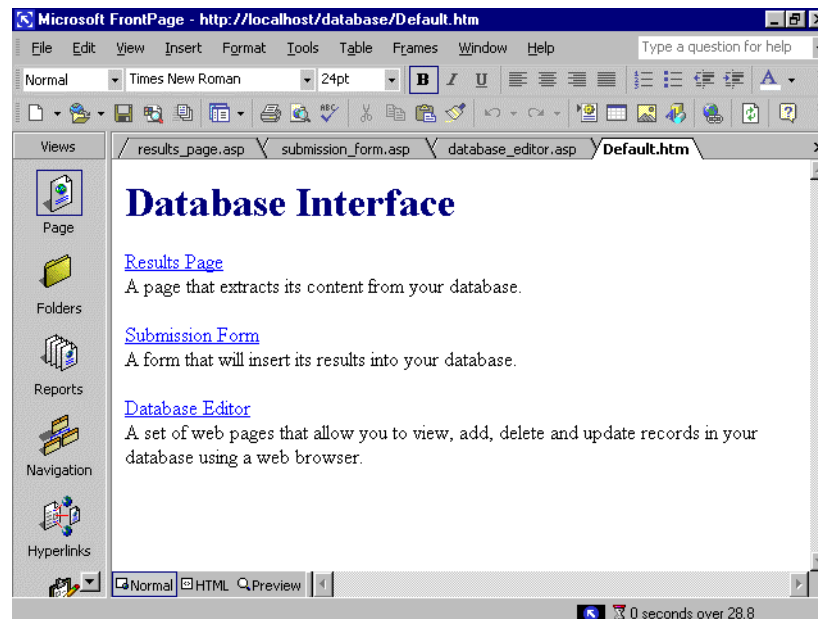


Figure 3-6: Results of Database Wizard

Note that it has created the three pages you requested along with a page that links to those pages.

Interacting with the Database

Once you have completed the Wizard, it is time to test and modify the interface pages. To test, you simply open the pages in a Web browser. You can browse the list of records (results_page.asp), input new records (submission_form.asp), and delete, add, or modify records (database_editor.asp).

To modify the pages, you double-click on the yellow cells. This will re-open the Wizard where you can make changes, such as changing the fields that appear on the page.



Exercise 3-4: Browsing the Interface Pages

In this exercise, you will test the interface pages, then re-open the Wizard.

1. Preview **Default.htm** in your browser.
2. Click on **Results page**.

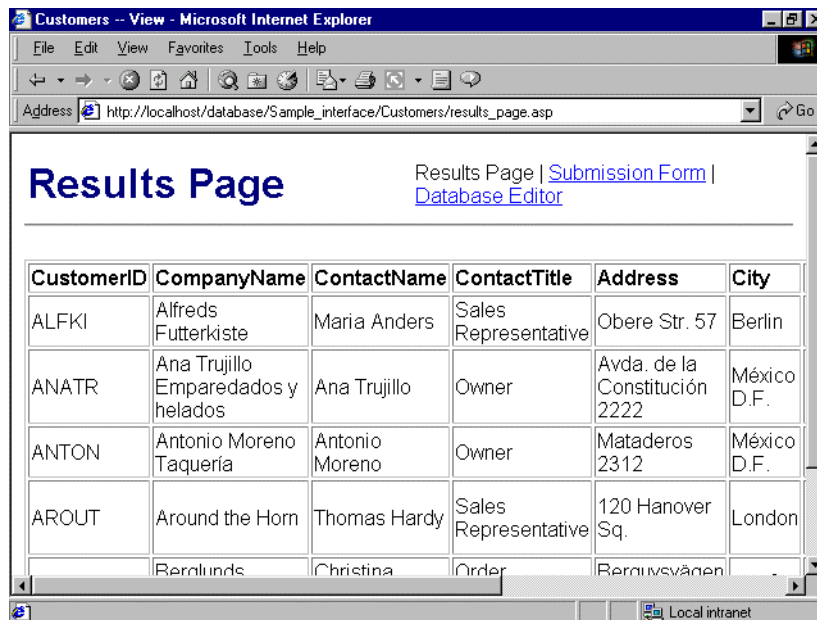


Figure 3-7: Results Page

3. Scroll through the records by clicking the **Next** button (>) at the bottom of the page.

Each page is dynamically generated based on the amount of records to display (which you will change in a future exercise).

4. Click on **Submission Form**.

Customers -- New - Microsoft Internet Explorer

Address http://localhost/database/Sample_interface/Customers/submission_form.asp

Submission Form

[Results Page](#) | [Submission Form](#) | [Database Editor](#)

CustomerID

CompanyName

ContactName

ContactTitle

Address

Done Local intranet

Figure 3-8: Submission Form

5. Complete the form using your own information (for CustomerID use any 5 letters/numbers you like).
6. Click **OK** to add your record to the database, then return to the form.
7. Click on **Database Editor**.

Customers -- Home - Microsoft Internet Explorer

Address http://localhost/database/Sample_interface/Customers/editor/database_editor.asp

Database Editor - Customers

[Results Page](#) | [Submission Form](#) | [Database Editor](#)

CustomerID	CompanyName	ContactName	ContactTitle	Address	City	Region
<input type="checkbox"/> ALEKI	Alfreds Futterkiste	Maria Anders	Sales Representative	Obere Str. 57	Berlin	
<input type="checkbox"/> ANATR	Ana Trujillo Emparedados y heladerias	Ana Trujillo	Owner	Avda. de la Constitución 2222	México D.F.	

No records returned.

Done Local intranet

Figure 3-9: Database Editor Page

8. Click the checkbox next to the first record and click **Delete Selected Records**.

9. Click on any **CustomerID** hyperlink to have the record appear in the bottom frame.

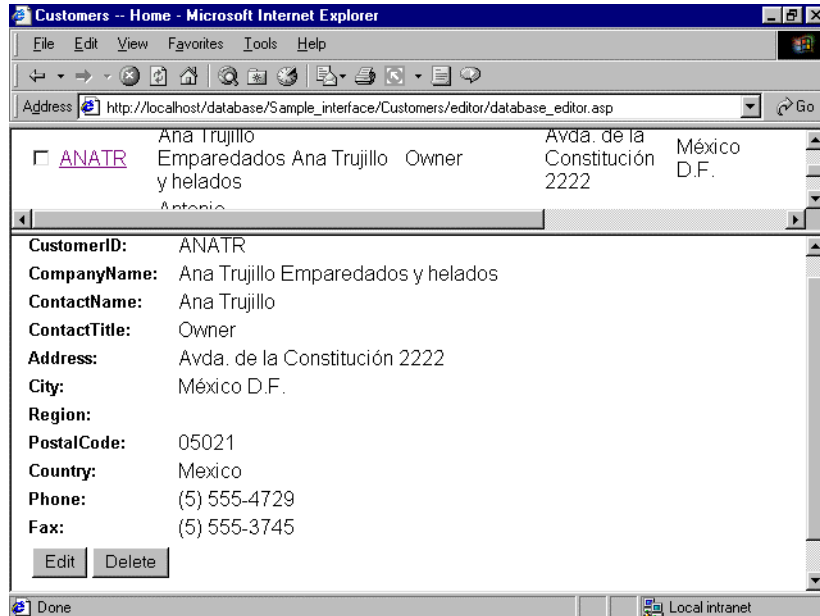


Figure 3-10: Editing Records

10. Click the **Edit** button, change the last name and click **OK**.
The record will change in the top frame to reflect the new last name you entered.
11. Return to FrontPage.
12. Select **results_page.asp**.

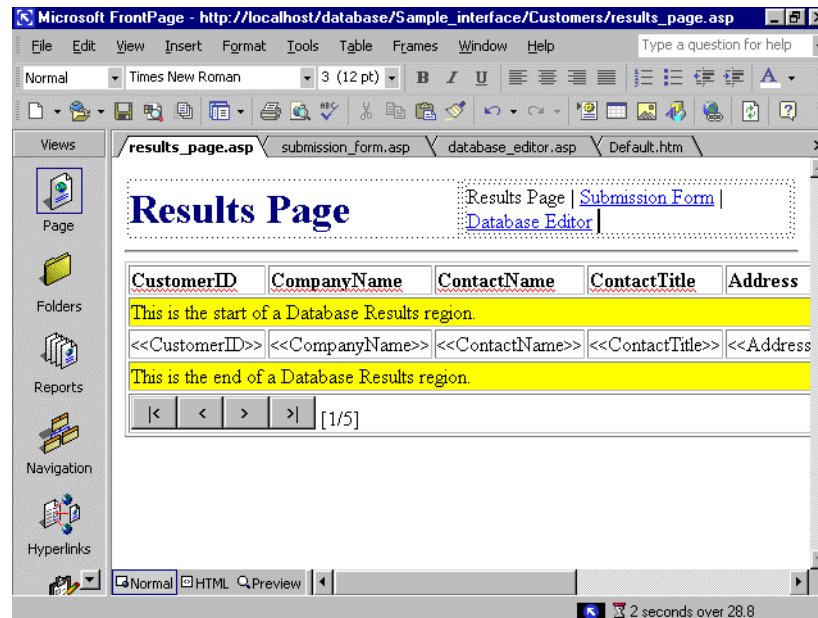


Figure 3-11: Results Page in FrontPage

13. Double-click on the yellow cell to start up the Wizard.

Remain on the first screen of the Wizard until the next exercise.

Modifying Database Connections

Display Fields

You can choose which fields you would like to display. The default is to have all fields appear, but by clicking Edit List you are able to add, reorder, and remove fields. You can think of the fields as column headings in a table – in fact, that is what they end up being once you apply the formatting. This is also the step in the Wizard where you can add filtering to your application using a search form, covered in a later section.

Results Formatting

The fourth step of the Wizard is where you apply the formatting. You can choose the results to appear in a table, as part of a list, or using a drop-down. Within each of those choices are properties that further determine the display. For tables, you can choose whether to have a border appear around the table, have the table expand to the width of the screen or to the largest cell contents, and have the field names appear at the top of the columns. For the list, you can add field names as labels for each field, choose to include a horizontal line in between records, and select from other list formats (e.g., bullet list). For instance, the drop-down list is used with query results so you can choose which fields you want to appear in the list.

Grouping Options and Finishing the Wizard

On the final step of this Wizard, you can choose how many records you would like to display at a time. The Wizard creates next and back buttons for navigating through the returned records if you designate a specific number of records to group. If you choose all records, then there is no need for navigation because the entire list will appear on one screen. If you have a lot of data, you will most likely want to group the data because it could take quite a while for the page to load if everything is listed on that one page.

When the Wizard is finished, it takes you to the FrontPage editing screen. There are place holders for the data fields and you see the general formatting of the data. To actually run the application, however, you will need to preview it in a browser.



Exercise 3-5: Making Modifications

In this exercise, you will remove a few of the fields that would otherwise be displayed and edit the number of records that appear on each page.

1. On the first screen of the Wizard, select Use a sample database connection (Northwind) and click Next.
2. For the Record source, again select Customers and click Next.

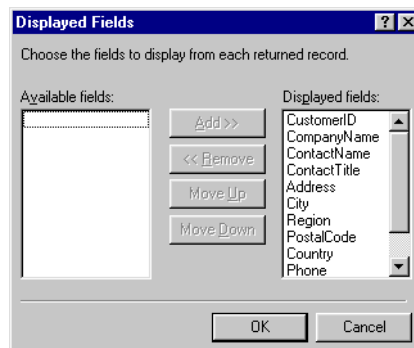


Figure 3-12: Editing the Fields List

3. Select **Address** and click **Remove**.
4. Repeat step 2 for **City**, **Region**, **PostalCode**, and **Country**.
5. Click **OK**.
6. Click **Next**.

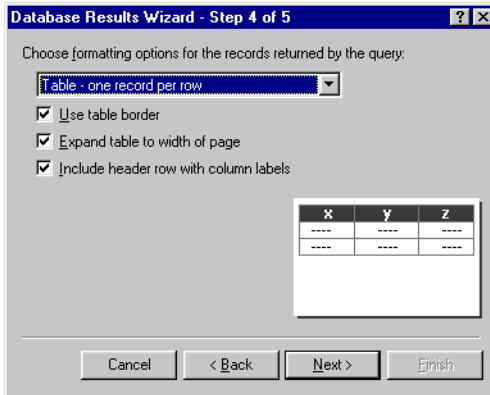


Figure 3-13: Step 4 of Web Database Results Wizard

7. Select **Table** and ensure that all of the table options are checked, then click **Next**.

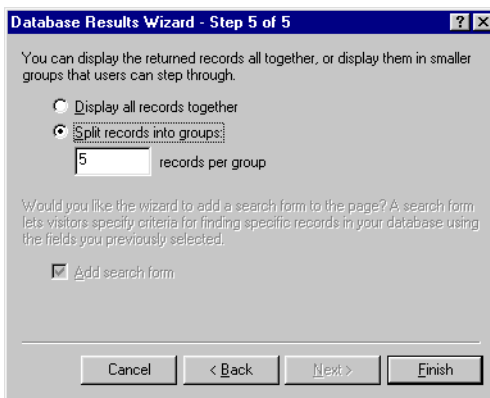


Figure 3-14: Step 5 of Database Results Wizard

8. If necessary, click **Split records**.
9. In the “records per group” field, type **7**.
10. Click **Finish**.

Note the changes made with the Wizard, although the number of records per page must be checked in a browser.

11. Preview **results_page.asp** in your browser – it should now display seven records per page.

Database Queries

Another aspect of the Database Results Wizard is that you can create a search function for your database. It's nice to list the data, but many users are accustomed to searching

a database for specific information. You can do this on Step #3 of the Wizard, where you are given the option to create filters. The filter allows you to select one field users may search on and to determine the search parameters, such as whether the user has to type in the query exactly or use a more flexible approach.



Exercise 3-6: Creating a Database Query

In this exercise, you will create a search field where users can look up a customer's name.

1. In FrontPage with **results_page.asp** open, double-click on the first yellow table cell to start up the Wizard.
2. Click **Next** on steps 1 and 2.
3. On step 3, click on **More Options...**

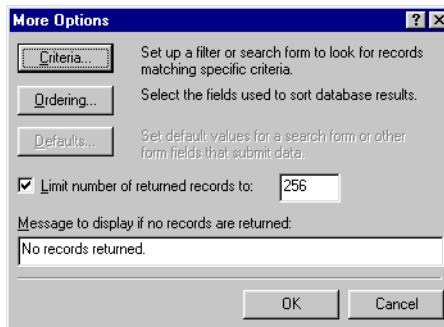


Figure 3-15: Setting up the Filter

4. Click on **Criteria...**

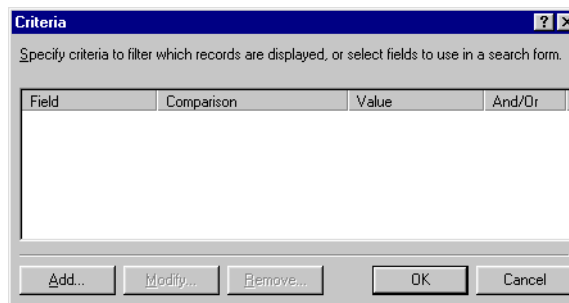


Figure 3-16: Creating the Criteria for the Search

5. Click on **Add...**

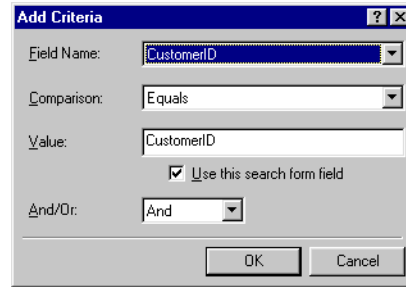


Figure 3-17: Adding Criteria

Here is where you build the search parameters for your database.

6. From **Field Name**, select **CompanyName**.

This will allow the user to search for a specific company name.

7. From **Comparison**, select **Contains**.

This will allow the user to type in only parts of the name to complete the search. For instance, if the user was looking for Mega Communications Inc., she need type in only "mega" to bring up that record.

8. In the **Value** field, it should now read **CompanyName**, which you can leave in place.

This is the text that will appear before the search field.

9. Click **OK** and **OK** again.
10. Keep clicking **Next** to finish the Wizard.

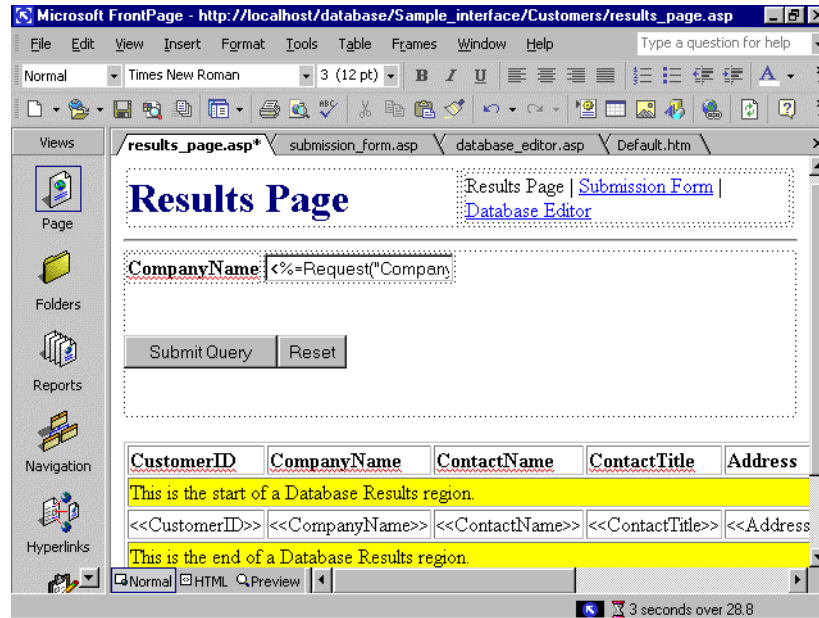


Figure 3-18: Search Field Added

Notice that FrontPage automatically inserted the form containing the search criteria for you.

11. Save the page, then switch to your browser and refresh the browser window.
12. Type in **well** and click **Submit Query**.

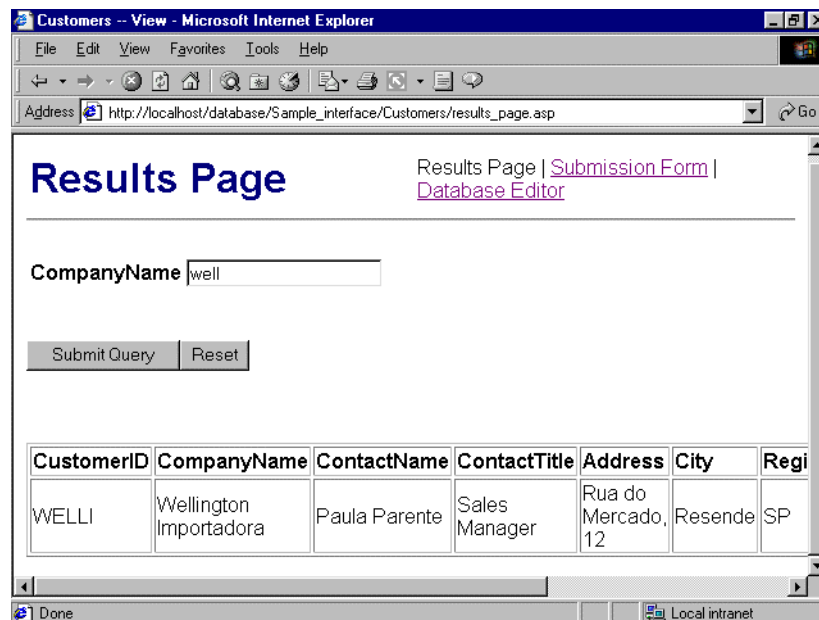


Figure 3-19: Database Search Results

Notice that you did not have to type in the full name to bring up the Wellington record. This is also another example of the page being created on the fly. Try a few more searches.

Review

In this lesson, you learned the basics of connecting a database to a FrontPage Web. You learned some of the advantages and disadvantages of connecting a database. Finally, you created a connection using a FrontPage Wizard.