Walkthrough: Creating a Simple Data Application

One of the most common scenarios in application development is to display data from a database on a Windows Form. You can display data on forms in Windows applications by dragging items from the Data Sources Window onto your form. This walkthrough demonstrates how to create an application that displays data from two related tables in a database.

For information on creating data applications using WPF, see Binding WPF Controls to Data in Visual Studio.

For information on creating data applications using Silverlight, see Binding Silverlight Controls to Data in Visual Studio.

For information on creating data applications using ASP.NET Web Forms, see ASP.NET Web Forms Data Access Options

This walkthrough illustrates the following tasks:

- Creating a Windows-based application.
- Creating and configuring a dataset that is based on the Customers and Orders tables in the Northwind database by using the Data Source Configuration Wizard.
- Adding controls to display data from the Customers table.
- Adding controls to display the orders based on the selected customer.
- Testing the application, selecting different customers and verifying that the correct orders are shown for the selected customer.
- Modifying data and saving it back to the database.

▶ For a video version of this topic, see Video How to: Creating a Simple Data Application.

Prerequisites

You need the following components to complete this walkthrough:

- Access to the Northwind sample database. For more information, see How to: Install Sample Databases.

Creating the Project

The first step is to create a Windows-based application.

Note

Your computer might show different names or locations for some of the Visual Studio user interface elements in the following instructions. The Visual Studio edition that you have and the settings that you use determine these elements. For more information, see Customizing Development Settings in Visual Studio.

To create the project

1. From the **File** menu, create a new project.
2. Select **Windows Forms Application** and name it **DataWalkthrough**. For more information, see Developing Client Applications with the .NET Framework.
3. Click **OK**.

   The **DataWalkthrough** project is created and added to **Solution Explorer**.

Creating the Data Source

This step creates a dataset that is based on the Customers and Orders tables in the Northwind sample database by using the **Data Source Configuration Wizard**.

To create the data source

1. On the **Data** menu, click **Show Data Sources**.
2. In the **Data Sources** window, click the **Add New Data Source** button in the toolbar to start the **Data Source Configuration Wizard**.
3. Select **Database** on the **Choose a Data Source Type** page, and then click **Next**.
4. On the **Choose Your Data Connection** page do one of the following:
   - If a data connection to the Northwind sample database is available in the drop-down list, select it.

     -or-

   - Select **New Connection** to launch the **Add/Modify Connection** dialog box.
5. If your database requires a password, select the option to include sensitive data, and then click **Next**.
6. Click **Next** on the **Save the Connection String to the Application Configuration File** page.
7. Expand the **Tables** node on the **Choose your Database Objects** page.
8. Select the **Customers** and **Orders** tables, and then click **Finish**.

   The **NorthwindDataSet** is added to your project and the **Customers** and **Orders** tables appear in the **Data Sources** window.

Creating Controls to Display Data from the Customers Table

You create data-bound controls by dragging items from the **Data Sources** window onto a Windows Form.

To create controls to display the customer data (parent records)

1. In the **Data Sources** window, select the **Customers** table, and then click the drop-down arrow.
2. Select **Details** from the **Customer** table's control list.
3. Drag the main **Customers** node from the **Data Sources** window onto Form1.

   Data-bound controls with descriptive labels appear on the form. The following components appear in the component tray:

   - NorthwindDataSet. The typed dataset that contains the Customers and Orders tables.
   - CustomersBindingSource. The BindingSource that binds the controls on the form to the Customers data table in NorthwindDataSet.
   - CustomersBindingNavigator. The BindingNavigator that is used for traversing the records in the Customers table.
   - CustomersTableAdapter. The **TableAdapter** that communicates between the database and NorthwindDataSet. For more information, see TableAdapter Overview.
   - TableAdapterManager. The **TableAdapterManager** component that is used to control the order of Inserts, Updates, and Deletes for all **TableAdapter** components in the dataset. For more information, see TableAdapterManager Overview.

Creating Controls to Display Data from the Orders Table

To create controls to display the orders for each customer (child records)

- In the **Data Sources** window, expand the **Customers** node and select the last column in the **Customers** table, which is an expandable **Orders** node beneath the **Fax** column, and drag it onto the bottom of **Form1**. (This node in the **Customers** table hierarchy represents the related orders for a customer, as opposed to the main **Orders** node, which represents all records in the `Orders` table and not the orders for an individual customer.)

  A DataGridView is added to the form, and a new BindingSource component (**OrdersBindingSource**) and TableAdapter (**OrdersTableAdapter**) are added to the component tray.

  Note

  Open the **Properties** window and select the **OrdersBindingSource** component. Inspect the DataSource and DataMember properties to see how data binding is configured to display related records. The DataSource is set to the **CustomersBindingSource** (the parent table's BindingSource), as opposed to the `Orders` table. The DataMember property is set to **FK_Orders_Customers**, which is the name of the DataRelation object that relates the tables to each other.

Testing the Application

To test the application

1. Press F5.

2. Select different customers to verify that the correct orders are displayed in the grid on the form.

3. Modify one or more records.

4. Click the **Save** button (the disk icon).

5. Verify that the changes were saved to the database.

Next Steps

Depending on your application requirements, there are several steps you may want to perform after creating a master-detail form. Some enhancements you could make to this walkthrough include:

- Editing the query that loads data into the application with the TableAdapter wizards. For more information, see How to: Edit TableAdapter Queries, and How to: Edit TableAdapters.

- Adding validation to verify the correct data is being entered before sending changes to the database. For more information, see Validating Data.

See Also

Concepts

Binding Windows Forms Controls to Data in Visual Studio
Preparing Your Application to Receive Data
Fetching Data into Your Application
Binding Controls to Data in Visual Studio
Editing Data in Your Application
Validating Data
Saving Data
TableAdapterManager Overview

Other Resources

Data Walkthroughs
Overview of Data Applications in Visual Studio
Connecting to Data in Visual Studio
Hierarchical Update
Working with Datasets in N-Tier Applications
LINQ to SQL [LINQ to SQL]