JOHN ABBOTT
CEGEP/COLLEGE

(420-PS4-AB)
ASP .NET: Data Sources (Part 1)

Aref Mourtada

Fall 2017

Outline

- Databases Introduction
- Relational Databases
- SQL

- Accessing Data Sources in ASP .NET

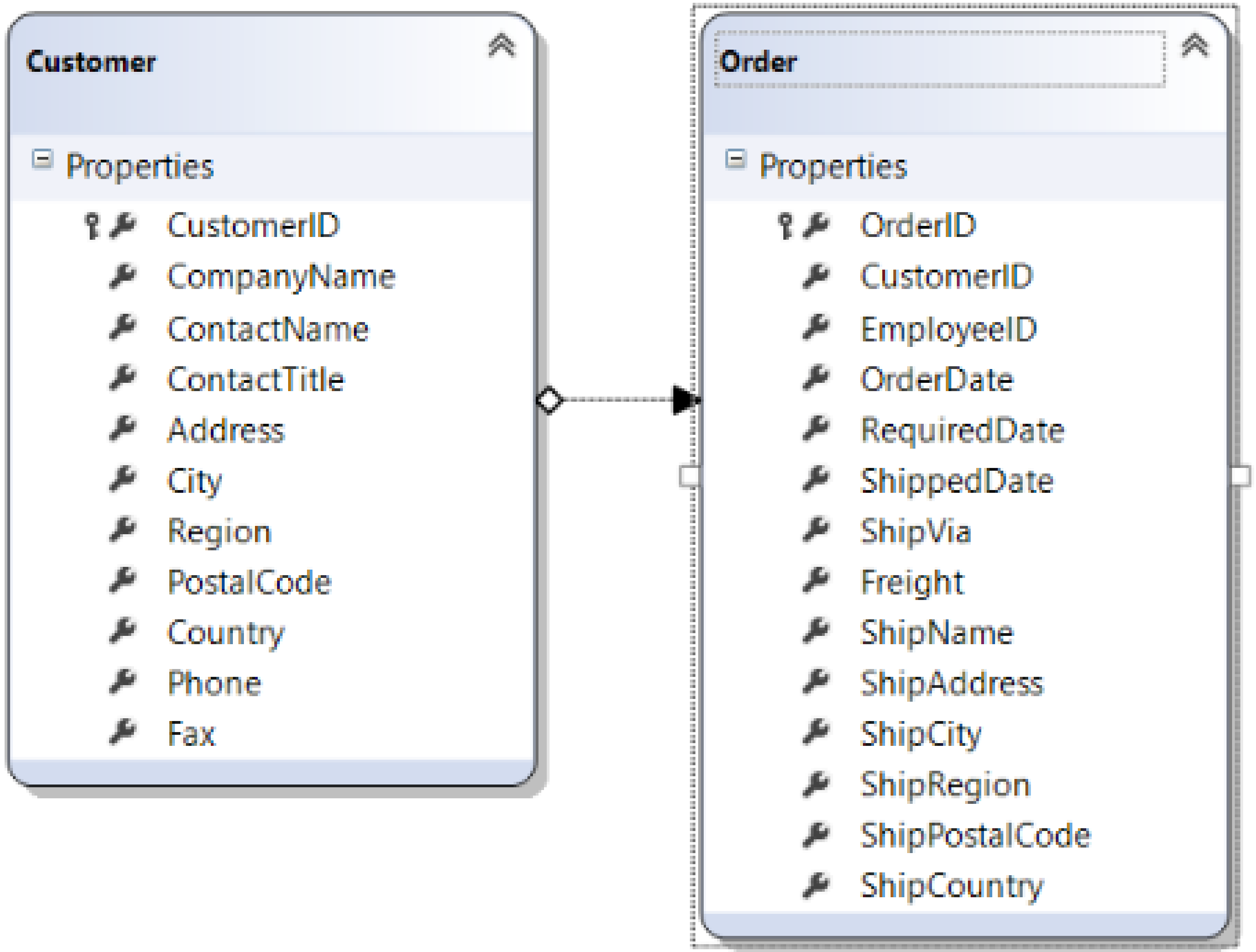
What is a database?

- A *database* is a collection of data that is arranged so it can be accessed, managed, and updated easily.
- Different types of databases:
  - Relational databases (most popular)
  - Flat-file
  - NoSQL
  - Object-relational
  - Object-oriented

Relational Databases

- Consists of **Tables**
  - Stores data is rows and columns.
  - A row consists of full data on an entry (record)
  - A column contains information about specific property of the row.
- Relational
  - Different tables in the database can be related to each other
  - Helps to eliminate duplication of data.

Relational Databases



Customer

Properties

- CustomerID
- CompanyName
- ContactName
- ContactTitle
- Address
- City
- Region
- PostalCode
- Country
- Phone
- Fax

Order

Properties

- OrderID
- CustomerID
- EmployeeID
- OrderDate
- RequiredDate
- ShippedDate
- ShipVia
- Freight
- ShipName
- ShipAddress
- ShipCity
- ShipRegion
- ShipPostalCode
- ShipCountry

Different Relational Databases

- Microsoft Access
- SQL Server
- Oracle
- SQLite
- MyQSL

SQL

- Structured Query Language
- A de facto language for querying relational databases that almost all relational database systems understand.
- Many database vendors have added their own extensions
    - Provides more flexibility and power on their own system
    - Decreases interoperability with other systems.

Installing a Sample Database

- Use a web search engine of your choice and search for

  Install SQL Server sample databases

https://msdn.microsoft.com/en-us/library/mt710790.aspx

- Save file in

  C:\Program Files\Microsoft SQL Server\MSSQL11.SQLEXPRESS\MSSQL\Backup

- Restore from SQL Server

SQL Different Data Types

- Numeric
- Date and time
- Characters \ Strings
- Binary
- Others

http://www.teratrax.com/sql-server-data-types-ranges/

What should I choose?

- Check the requirement of your application.
- Standards: national, international
- Search the web for developers opinions.

- Examples:

Email fields: NVARCHAR(320)

  - 64 characters for the "local part" (username).
  - 1 character for the **@** symbol.
  - 255 characters for the domain name.
  - NVARCHAR to support Unicode.

Phone numbers: VARCHAR(??)

  - International, national, local, extensions.. etc.

Data in SQL: Reading Data

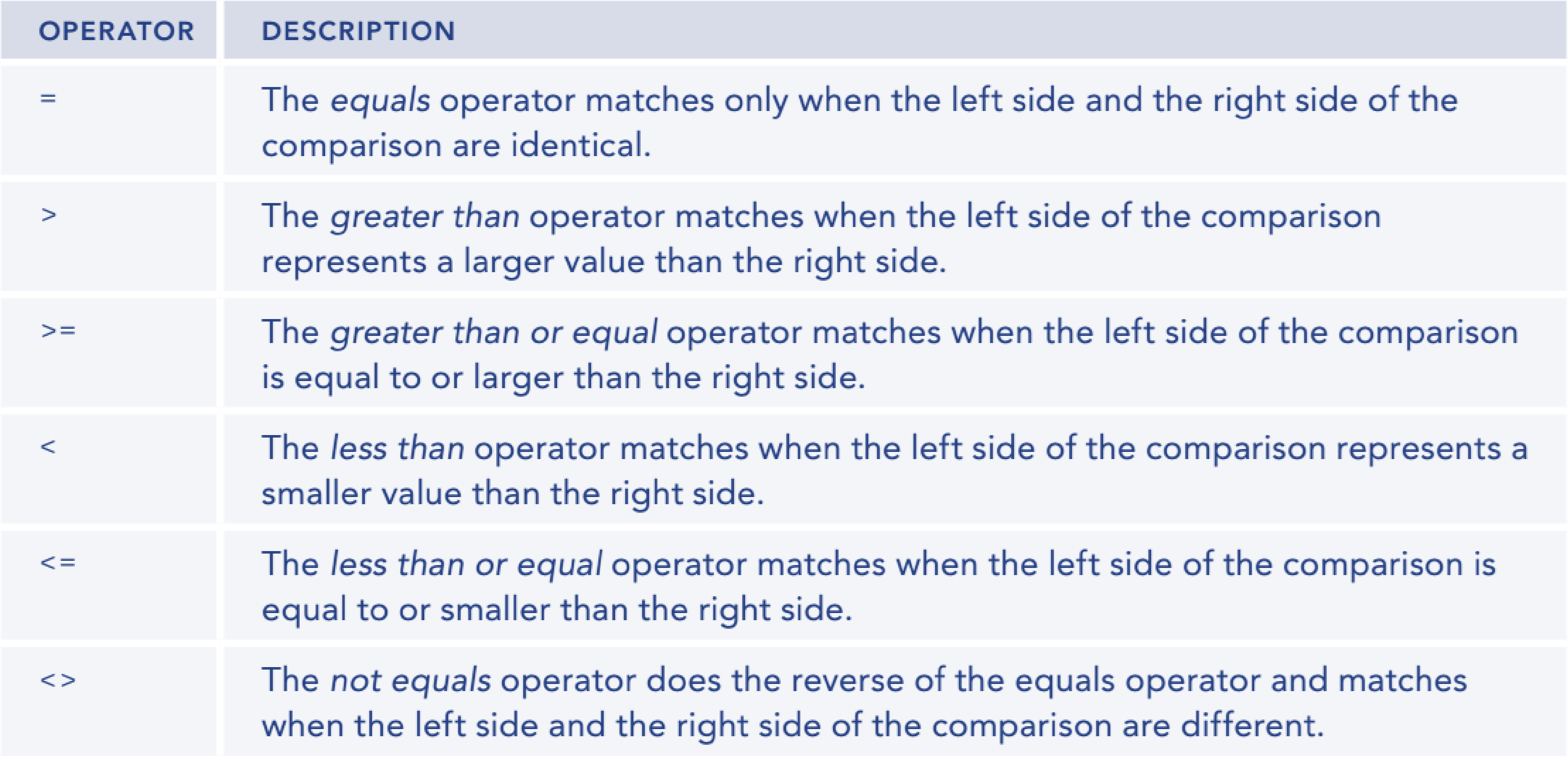
- `SELECT` statement

```
SELECT ColumnName [, OtherColumnNames] FROM TableName
```

- Examples:

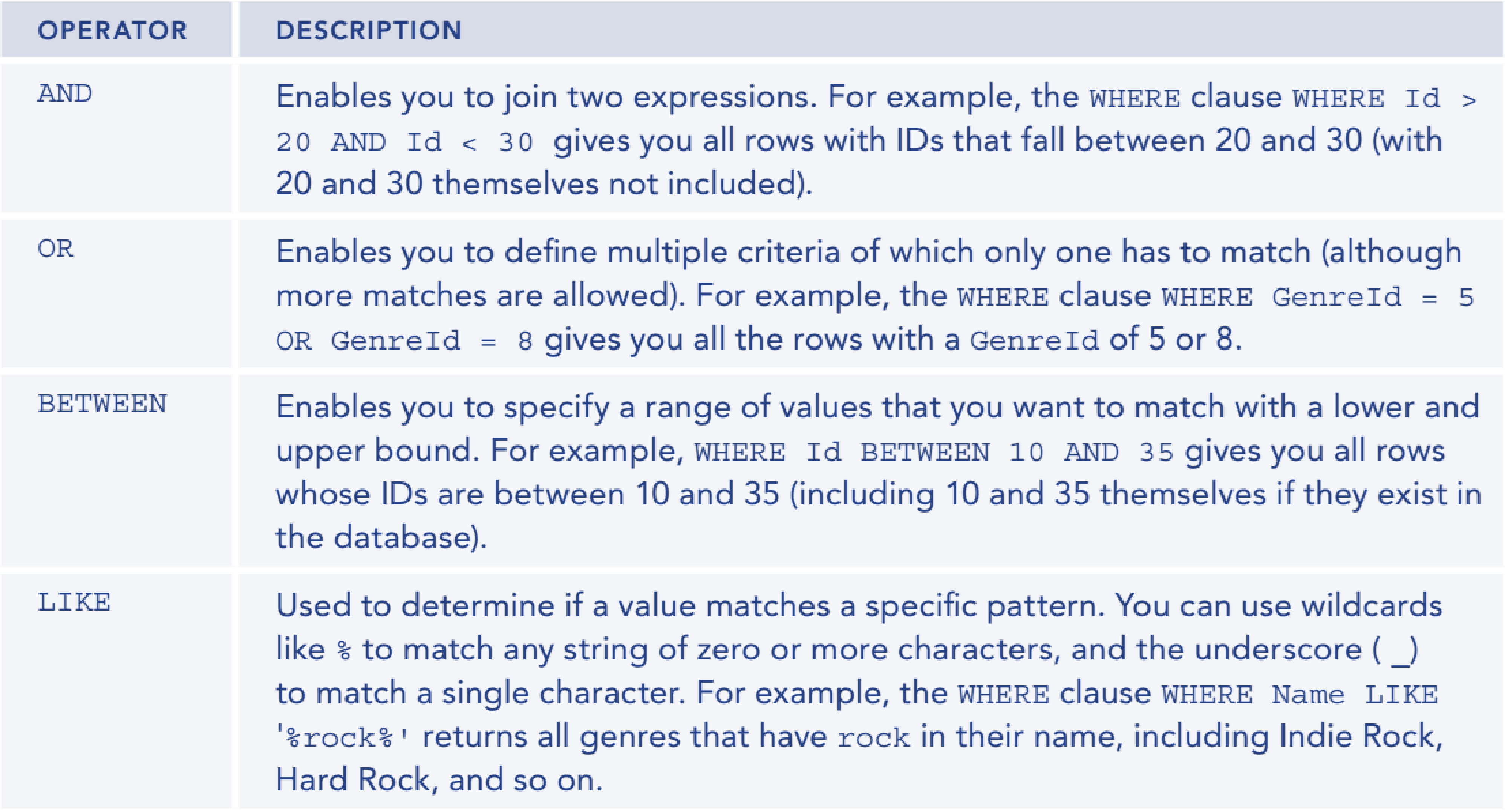
```
SELECT Id, Name FROM Genre
SELECT Id AS GenreId, Name FROM Genre
SELECT Id FROM Genre WHERE Name = ‘Thomas'
SELECT Name FROM Genre WHERE Id = 10
```

`WHERE` Clauses Comparison Operators



OPERATOR	DESCRIPTION
=	The *equals* operator matches only when the left side and the right side of the comparison are identical.
>	The *greater than* operator matches when the left side of the comparison represents a larger value than the right side.
>=	The *greater than or equal* operator matches when the left side of the comparison is equal to or larger than the right side.
<	The *less than* operator matches when the left side of the comparison represents a smaller value than the right side.
<=	The *less than or equal* operator matches when the left side of the comparison is equal to or smaller than the right side.
<>	The *not equals* operator does the reverse of the equals operator and matches when the left side and the right side of the comparison are different.

`WHERE` Clauses Combination Operators



OPERATOR	DESCRIPTION
`AND`	Enables you to join two expressions. For example, the `WHERE` clause `WHERE Id > 20 AND Id < 30` gives you all rows with IDs that fall between 20 and 30 (with 20 and 30 themselves not included).
`OR`	Enables you to define multiple criteria of which only one has to match (although more matches are allowed). For example, the `WHERE` clause `WHERE GenreId = 5 OR GenreId = 8` gives you all the rows with a `GenreId` of 5 or 8.
`BETWEEN`	Enables you to specify a range of values that you want to match with a lower and upper bound. For example, `WHERE Id BETWEEN 10 AND 35` gives you all rows whose IDs are between 10 and 35 (including 10 and 35 themselves if they exist in the database).
`LIKE`	Used to determine if a value matches a specific pattern. You can use wildcards like `%` to match any string of zero or more characters, and the underscore (_) to match a single character. For example, the `WHERE` clause `WHERE Name LIKE '%rock%'` returns all genres that have `rock` in their name, including Indie Rock, Hard Rock, and so on.

SQL Ordering Data

- `ORDER BY: used` at the end of the SQL statement
- May contain one or more column names or expressions
- Sorting options
  - `ASC`: ascending order(default)
  - `DESC`: descending order
- Example:

```
SELECT Id, Name FROM Genre ORDER BY Name DESC
```

Joining Data

- JOIN: Enables to query a relationship between one or more tables.
- Example:

```
SELECT
    Review.Id, Review.Title, Genre.Name
FROM
    Review
INNER JOIN Genre ON
    Review.GenreId = Genre.Id
```

Joining Data

- INNER JOIN: returns only matching rows.
- OUTER JOIN: enables you to retrieve rows from one table regardless of whether they have a matching row in another table. (Return NULL if not available).
- Example

```
SELECT
        Genre.Id, Genre.Name, Review.Title
FROM
        Genre
LEFT OUTER JOIN Review ON
        Genre.Id = Review.GenreId
```

Data in SQL: Creating Data

- `INSERT` statement

```
INSERT INTO TableName (Column1 [, Column2]) VALUES (Value1
[, Value2])
```

- Examples:

```
INSERT INTO Genre (Name, SortOrder) VALUES
    ('Tribal House', 20)
```

- Enclose string and date values in single quotes
- Enter numbers and boolean values directly in your SQL statement.

Data in SQL: Updating Data

- `UPDATE` statement

```
UPDATE TableName SET Column1 = NewValue1 [, Column2 =
NewValue2] WHERE Column3 = Value3
```

- Examples:

```
UPDATE Genre SET Name = 'Trance', SortOrder = 5 WHERE Id =
13
```

- `WHERE` clause limits the number of rows that get affected with the `UPDATE` statement.

Data in SQL: Deleting Data

- DELETE statement

```
DELETE FROM TableName WHERE Column1 = ValueXYZ
```

- Examples:

```
DELETE FROM Genre WHERE Id = 13
```

- WHERE clause limits the number of rows that get affected with the UPDATE statement.
- If the WHERE clause was not used, all row will be deleted.

ASP .NET and Data Sources

- Data Binding in ASP .NET
- Data Binding Expressions

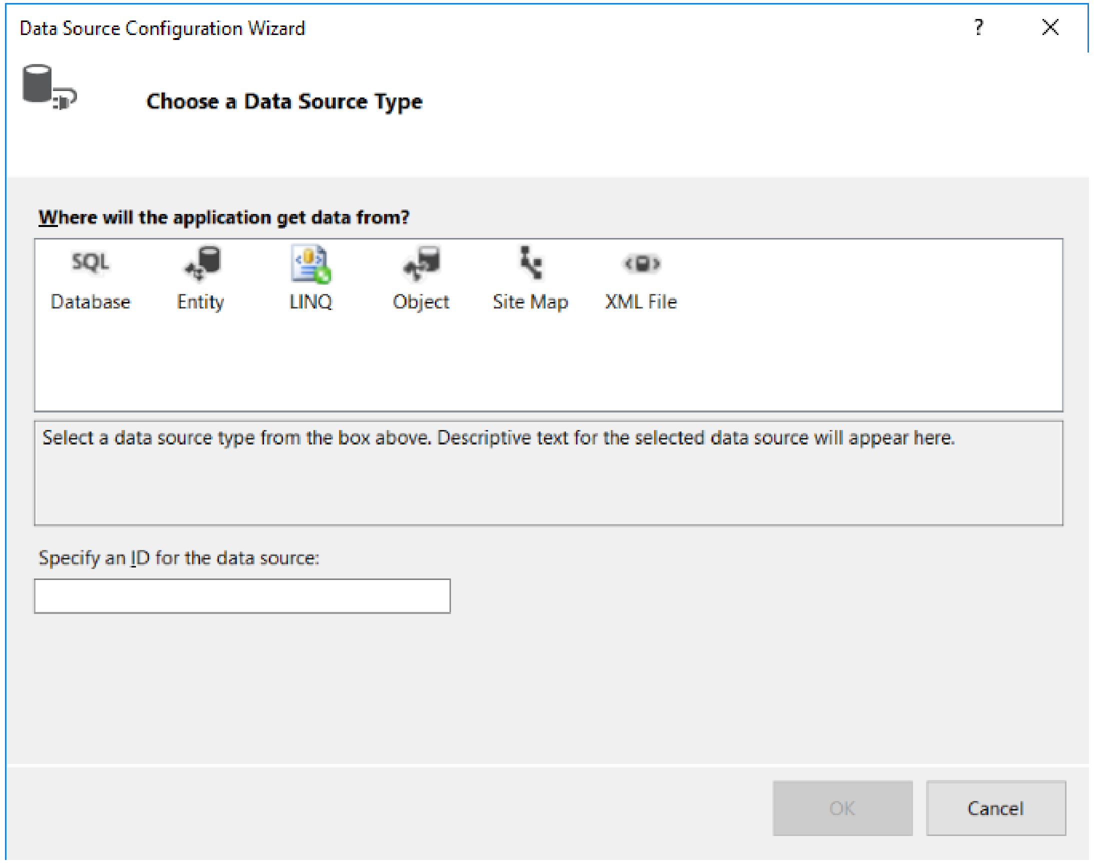
- **Using the SqlDataSource**
- **Using the ObjectDataSource**
- Using the EntityDataSource
- Using the QueryExtender

Data Binding and Data Source Controls

- Data Binding support is built into ASP .NET
  - Allows us to take data from different sources and bind them in out web controls.
- Data Source controls allow data to be accessed from data sources and bound to controls
  - Relational data
  - Hierarchical data
  - Custom Objects and Collections
- Data aware controls have a DataSourceID property that is used to bind a control to a Data Source control

Types of Data Source Controls

- **SQL Database**: Can be used with multipole types of DBs (Not only SQL Server)
- **Entity**: Entity Framework models.
- **LINQ**: LINQ to SQL diagrams.
- **Object**: N-tier or N-layer architecture - reusability
- **SiteMap**: used for navigational purposes. (Hierarchical)
- **XML File**: used for XML feeds such as RSS feeds. (Hierarchical)



Data Source Configuration Wizard

Choose a Data Source Type

Where will the application get data from?

Select a data source type from the box above. Descriptive text for the selected data source will appear here.

Specify an ID for the data source:

Data Binding Expressions

- Data binding expressions provide a compact and simple way to bind specific data to controls
- ASP.NET data binding expressions:

```
<%# Eval (...) %>
<%# Bind (...) %>
<%# XPath (...) %>
```

- Data binding expression example:

```
<%# Eval(“FieldName”) %>
```

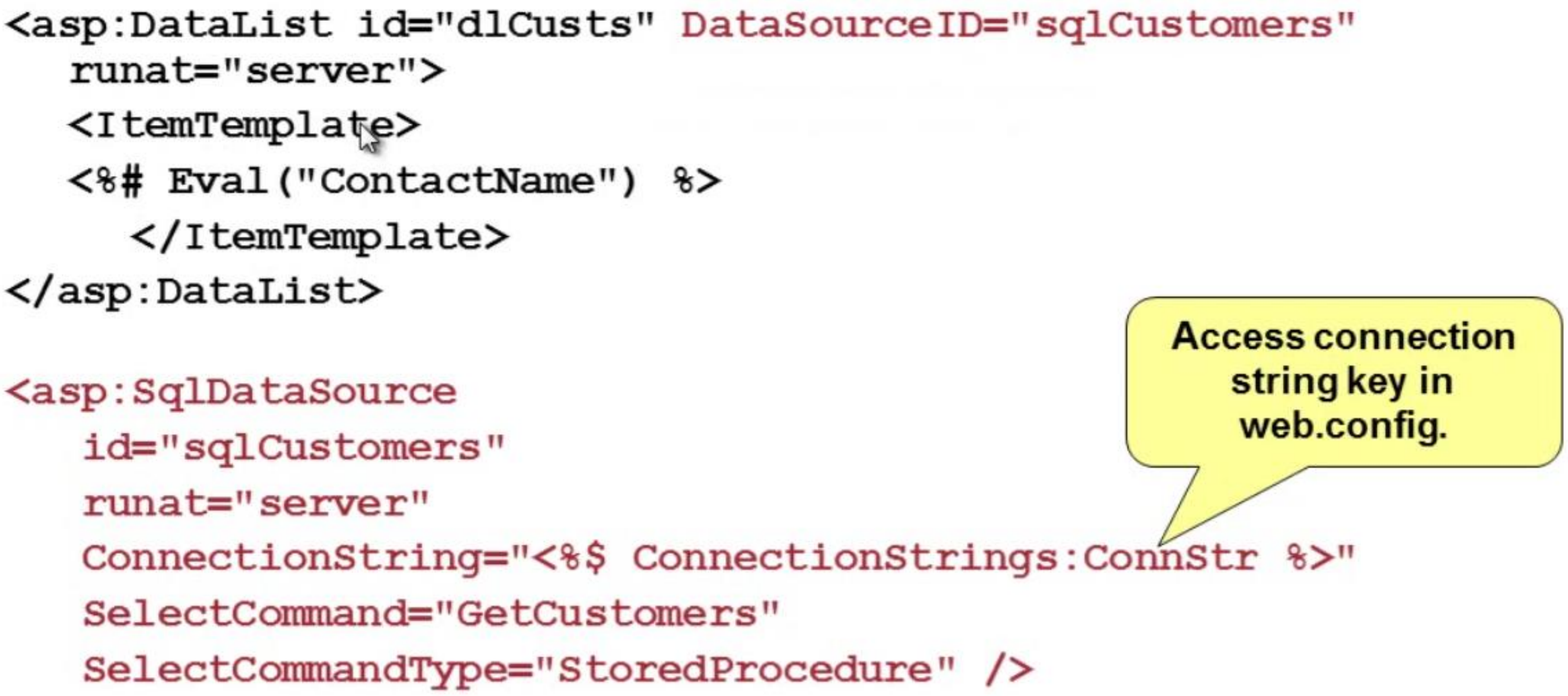
Using Data Binding: Example

```
<asp:GridView ID="gvCustomers" runat="server">
        <asp:TemplateColumn>
            <ItemTemplate>
                    <%# Eval("ContactName") %>
            </ItemTemplate>
        </asp:TemplateColumn>
    </asp:GridView>
```

Using SqlDataSource Control

- Provides a lot with a little effort,
- Makes it easy to query various types of DBs.
- SqlDataSource provides declarative data binding between a database and controls:
    - Supports four managed providers (SQL, OleDb, ODBC, Oracle)
    - Loads data into memory (DataSet mode) or stream data (DataReader mode) (can be changed using DataSourceMode property)
    - Supports filtering and sorting
    - Supports select, insert, update and delete commands
    - Provides built-in caching support

SqlDataSource Code Example



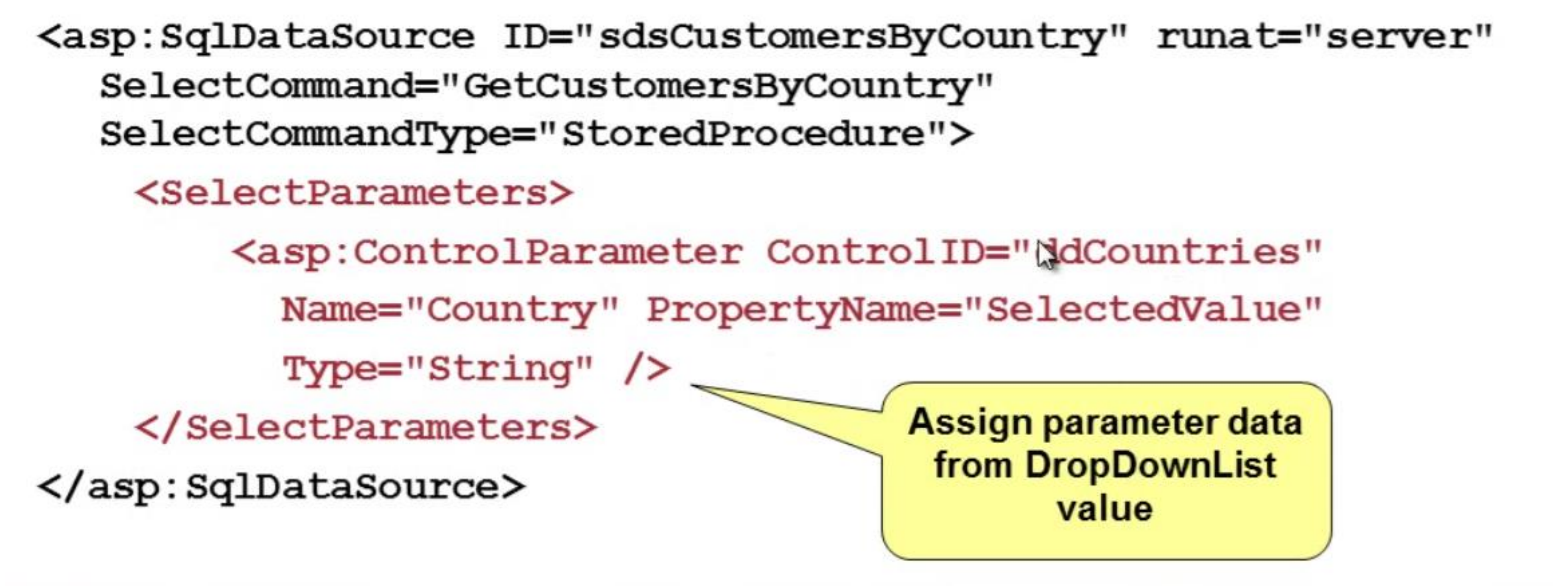
```
<asp:DataList id="dlCusts" DataSourceID="sqlCustomers"
   runat="server">
   <ItemTemplate>
   <%# Eval("ContactName") %>
      </ItemTemplate>
</asp:DataList>

<asp:SqlDataSource
    id="sqlCustomers"
    runat="server"
    ConnectionString="<%$ ConnectionStrings:ConnStr %>"
    SelectCommand="GetCustomers"
    SelectCommandType="StoredProcedure" />
```

Access connection string key in web.config.

Data Source Parameter

Parameter Type	Description
Parameter	Represents a parameter in a parameterized SQL query, a filtering expression, or a business object method call.
ControlParameter	Binds the value of a Control property to a parameter used by a data source control.
CookieParameter	Binds the value of a client-side HTTP cookie to a parameter used by a data source control.
FormParameter	Binds the value of a form variable in the Form collection to a parameter used by a data source control.
ProfileParameter	Binds the value of an ASP.NET Profile property to a parameter used by a data source control.
QueryStringParameter	Binds the value of a QueryString parameter to a parameter used by a data source control.
SessionParameter	Binds the value of a session variable to a parameter used by a data source control.

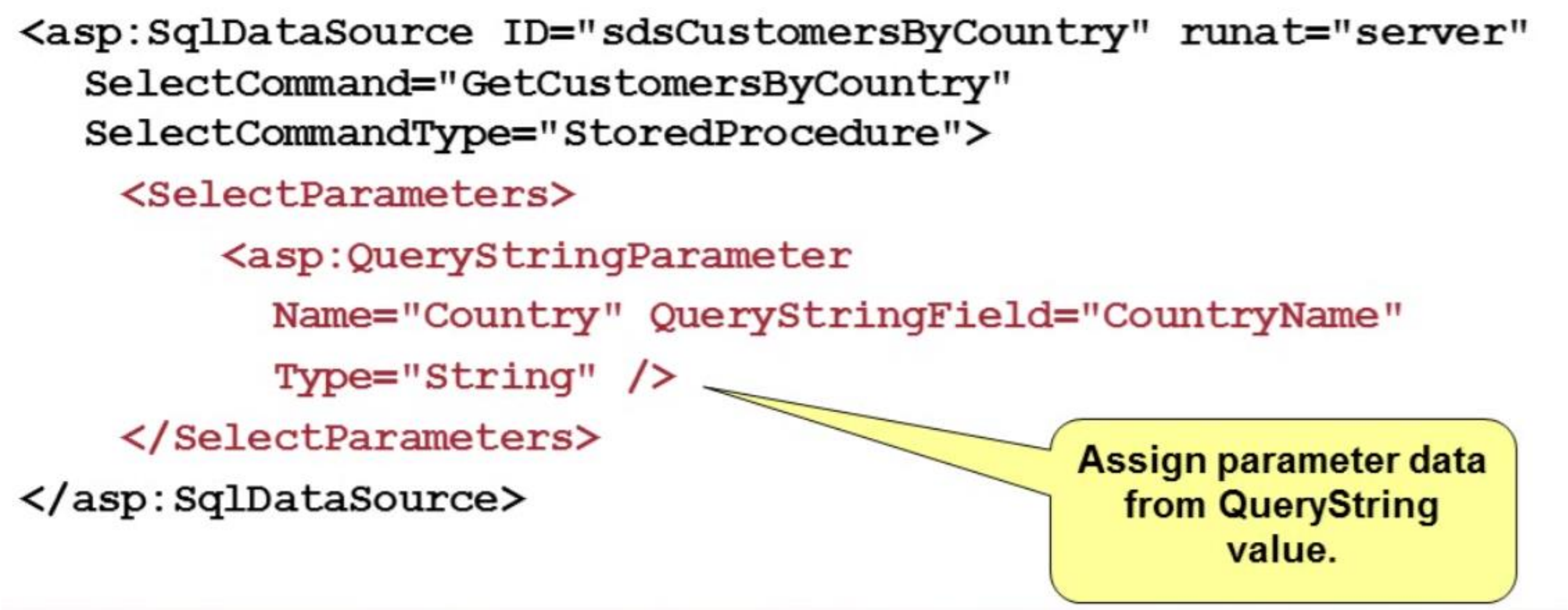
Using ControlParamter Example



```
<asp:SqlDataSource ID="sdsCustomersByCountry" runat="server"
   SelectCommand="GetCustomersByCountry"
   SelectCommandType="StoredProcedure">
    <SelectParameters>
        <asp:ControlParameter ControlID="ddlCountries"
          Name="Country" PropertyName="SelectedValue"
          Type="String" />
    </SelectParameters>
</asp:SqlDataSource>
```

Assign parameter data from DropDownList value

Using QueryStringParamter Example



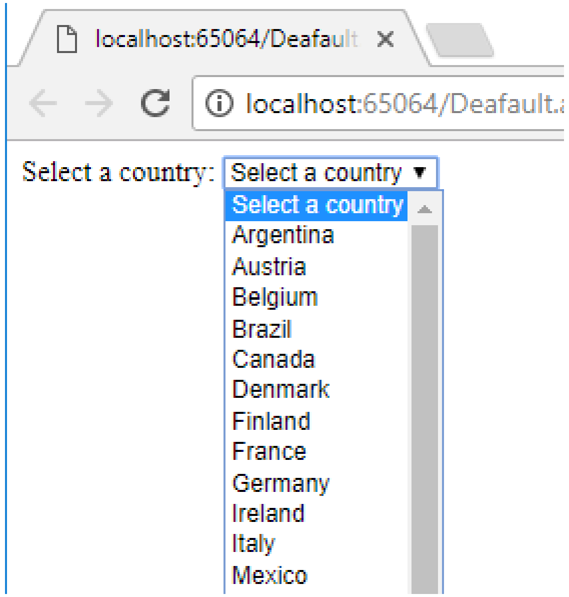
```
<asp:SqlDataSource ID="sdsCustomersByCountry" runat="server"
   SelectCommand="GetCustomersByCountry"
   SelectCommandType="StoredProcedure">
    <SelectParameters>
        <asp:QueryStringParameter
          Name="Country" QueryStringField="CountryName"
          Type="String" />
    </SelectParameters>
</asp:SqlDataSource>
```

Assign parameter data from QueryString value.

Demo: SQLDataSourceDEMO

- Build a simple page using multiple controls all loading data from SQL Server database.
- Task:
  - Use database: Northwind
  - Load all countries in the Customers table in the DB into a drop down list.
  - Upon selection of country, load all customers from that country into a GridView
  - Finally, select a customer from the grid and view all details in a DetailsView.

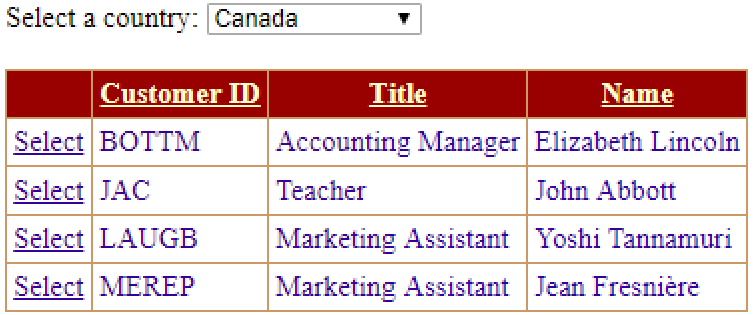
Demo: Snapshots



Select a country: Select a country

- Select a country
- Argentina
- Austria
- Belgium
- Brazil
- Canada
- Denmark
- Finland
- France
- Germany
- Ireland
- Italy
- Mexico

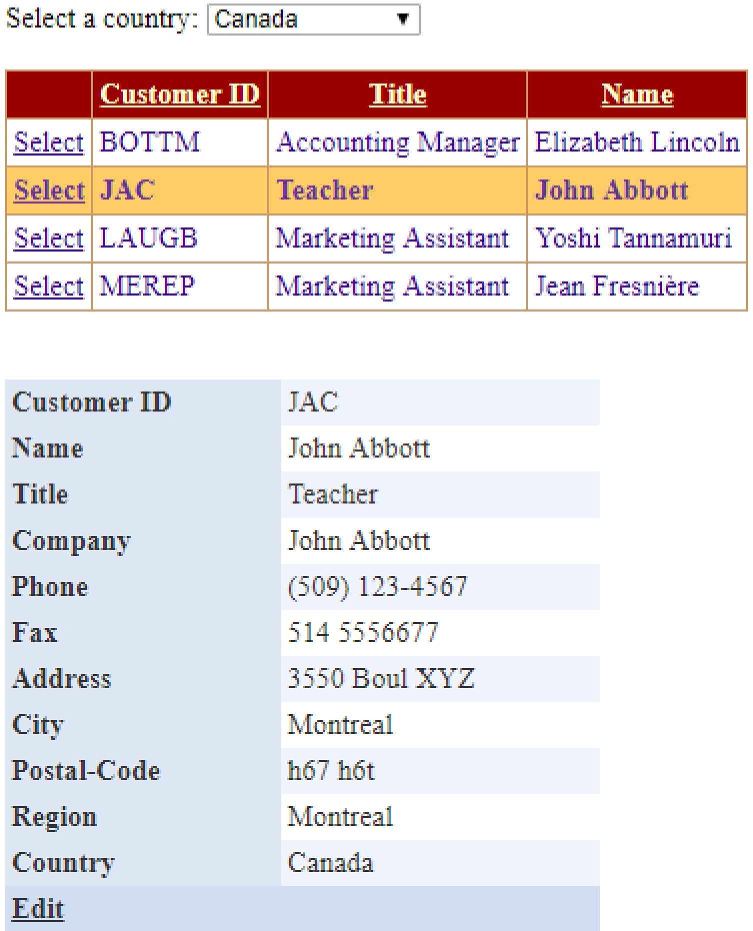
Load countries in a drop down list



Select a country: Canada

	Customer ID	Title	Name
Select	BOTTM	Accounting Manager	Elizabeth Lincoln
Select	JAC	Teacher	John Abbott
Select	LAUGB	Marketing Assistant	Yoshi Tannamuri
Select	MEREP	Marketing Assistant	Jean Fresnière

Load all customers from that country in Grid View



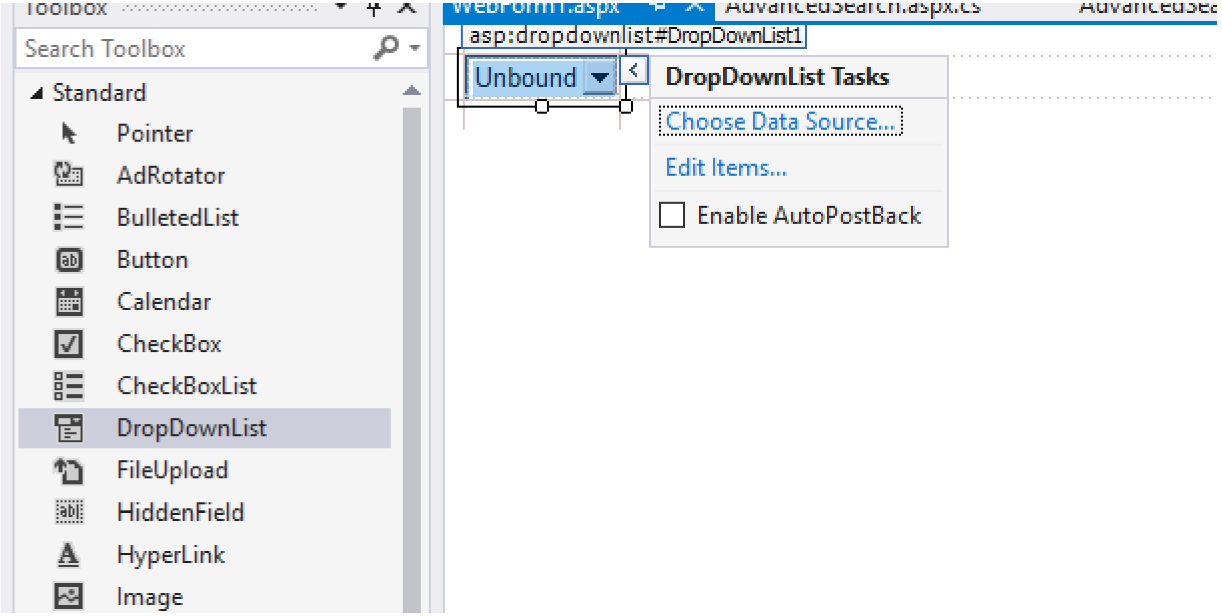
Select a country: Canada

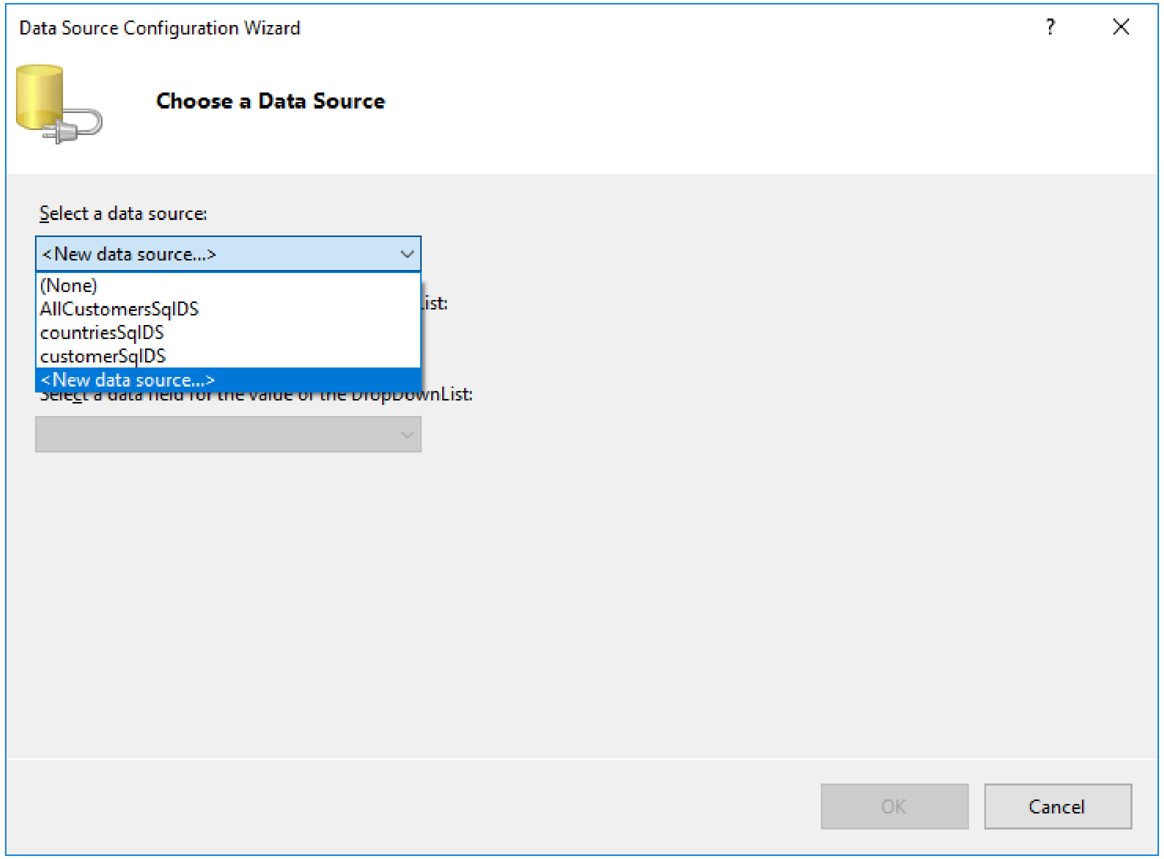
	Customer ID	Title	Name
Select	BOTTM	Accounting Manager	Elizabeth Lincoln
Select	**JAC**	**Teacher**	**John Abbott**
Select	LAUGB	Marketing Assistant	Yoshi Tannamuri
Select	MEREP	Marketing Assistant	Jean Fresnière

Customer ID	JAC
Name	John Abbott
Title	Teacher
Company	John Abbott
Phone	(509) 123-4567
Fax	514 5556677
Address	3550 Boul XYZ
City	Montreal
Postal-Code	h67 h6t
Region	Montreal
Country	Canada
Edit	

Load a specific customer information in a details view

Demo: Adding a data source for a control





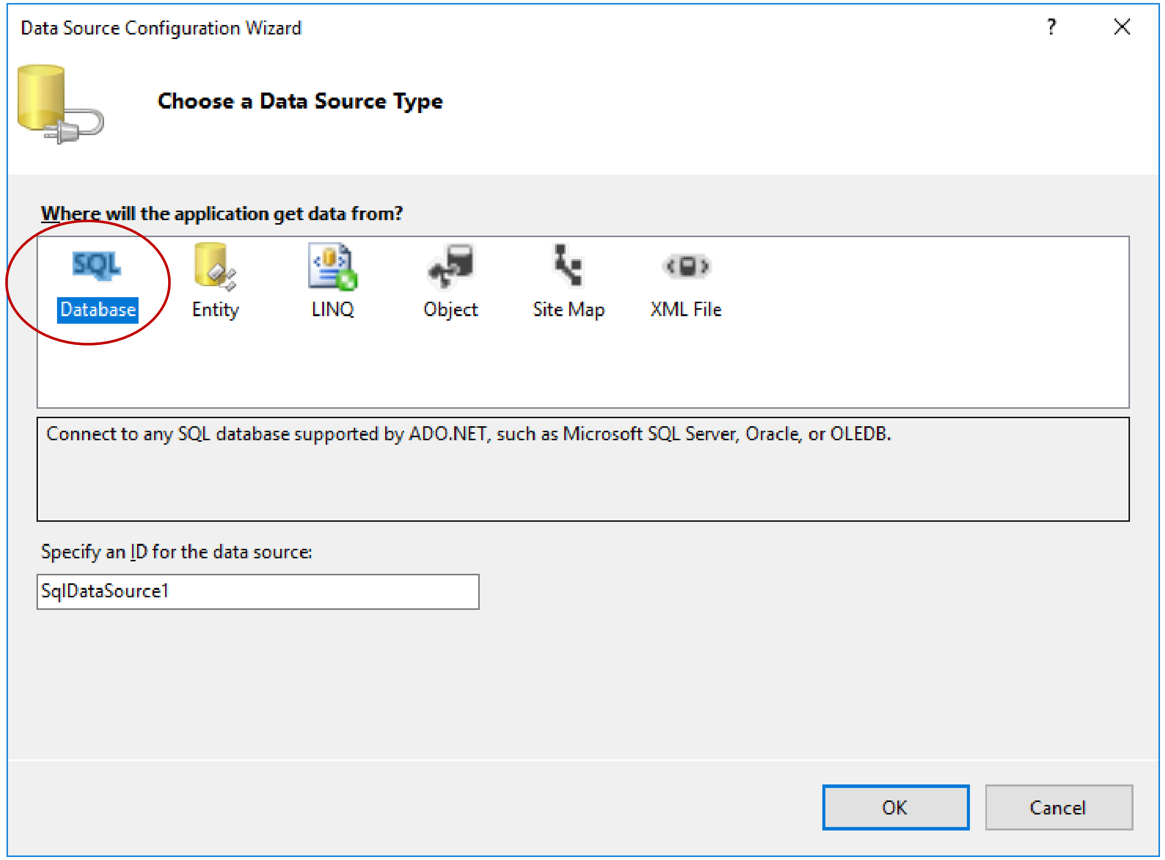
Select a data source: <New data source...>

...ist:

Select a data field for the value of the DropDownList:

Choose Data Source → New Data Source

Demo: SQL Data Source



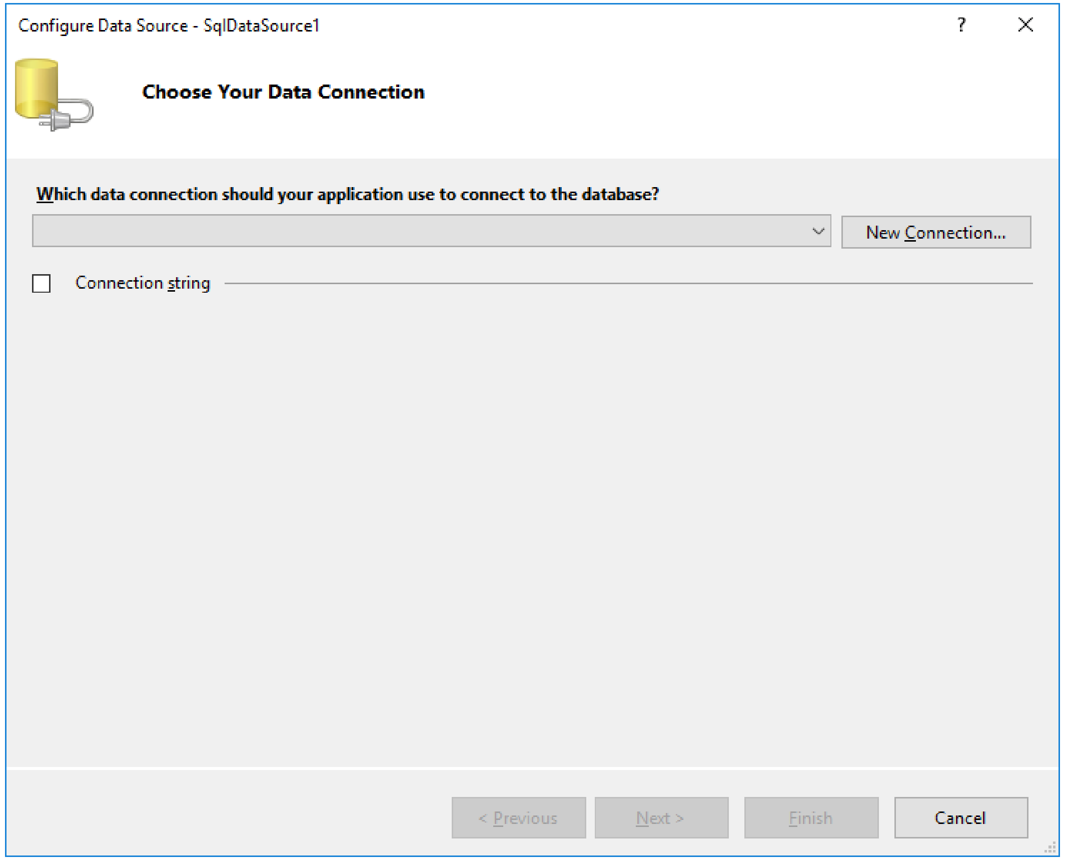
Data Source Configuration Wizard

Choose a Data Source Type

Where will the application get data from?

Connect to any SQL database supported by ADO.NET, such as Microsoft SQL Server, Oracle, or OLEDB.

Specify an ID for the data source: SqlDataSource1



Configure Data Source - SqlDataSource1

Choose Your Data Connection

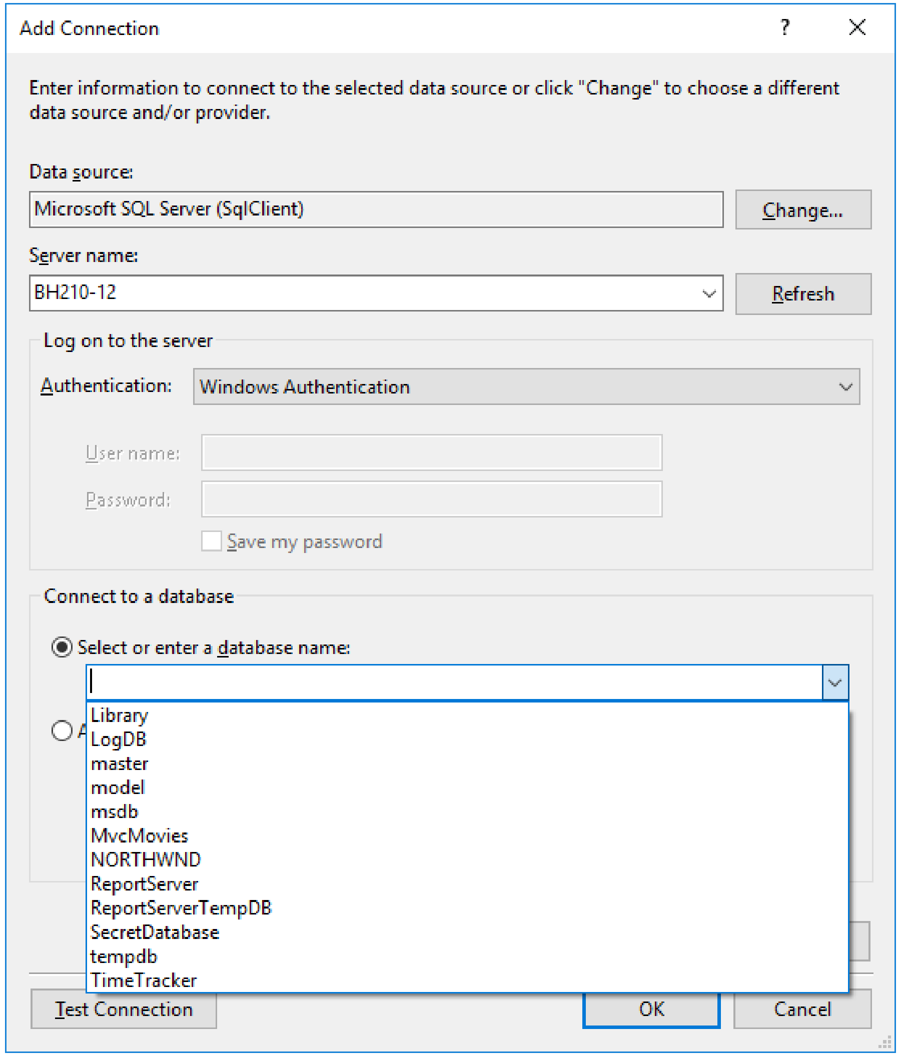
Which data connection should your application use to connect to the database?

SQL Database

New Connection: When connecting to a new database
Or choose from the drop down list

Demo: Adding a new connection

- Data Source: add you own server name.
- Select the database from the drop down.



Add Connection

Enter information to connect to the selected data source or click "Change" to choose a different data source and/or provider.

Data source: Microsoft SQL Server (SqlClient)

Server name: BH210-12

Log on to the server

Authentication: Windows Authentication

User name:

Password:

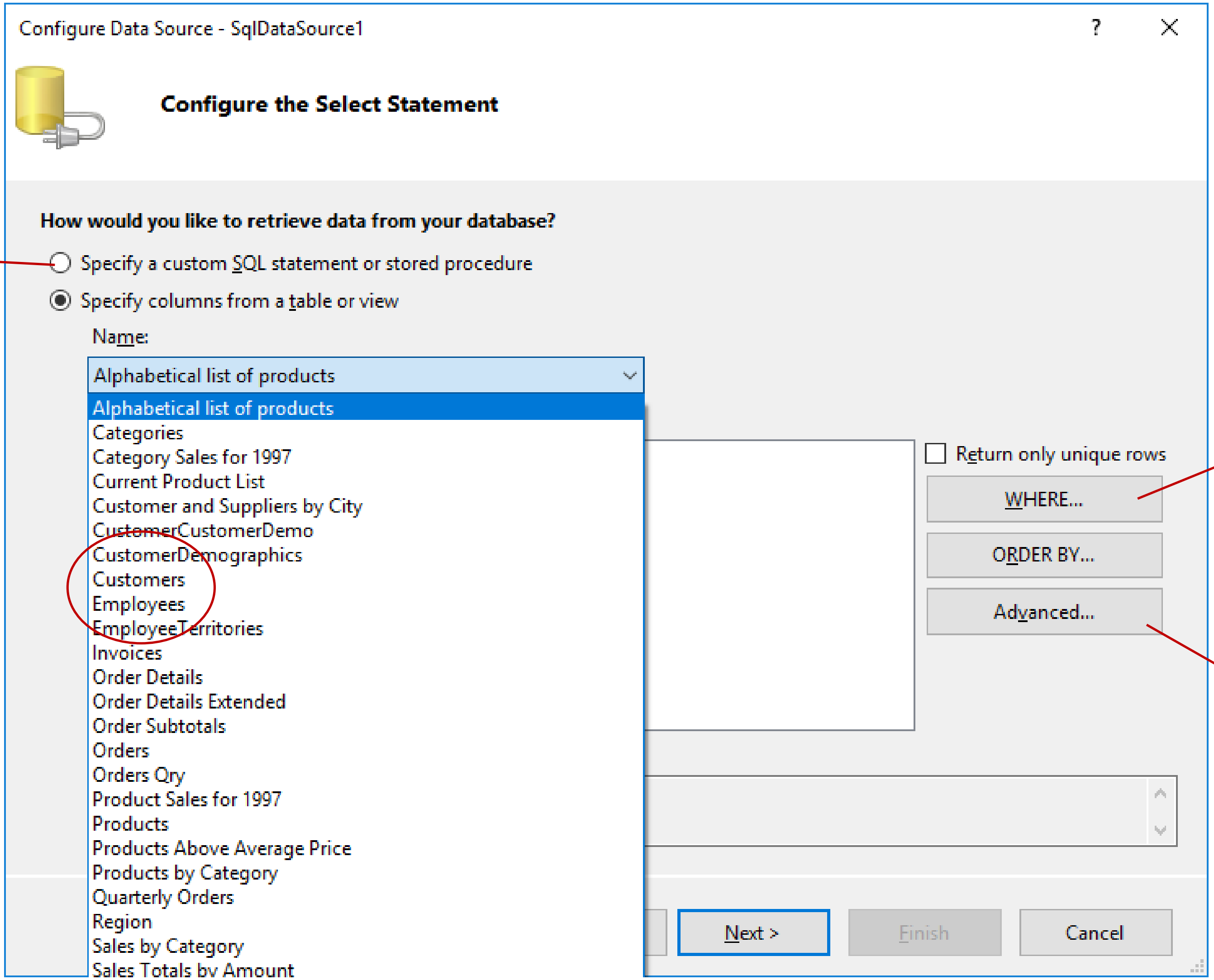
□ Save my password

Connect to a database

● Select or enter a database name:

Library
LogDB
master
model
msdb
MvcMovies
NORTHWND
ReportServer
ReportServerTempDB
SecretDatabase
tempdb
TimeTracker

Demo: SQLDataSource Options (1)



Configure Data Source - SqlDataSource1

Configure the Select Statement

How would you like to retrieve data from your database?

○ Specify a custom SQL statement or stored procedure

● Specify columns from a table or view

Name:

Alphabetical list of products

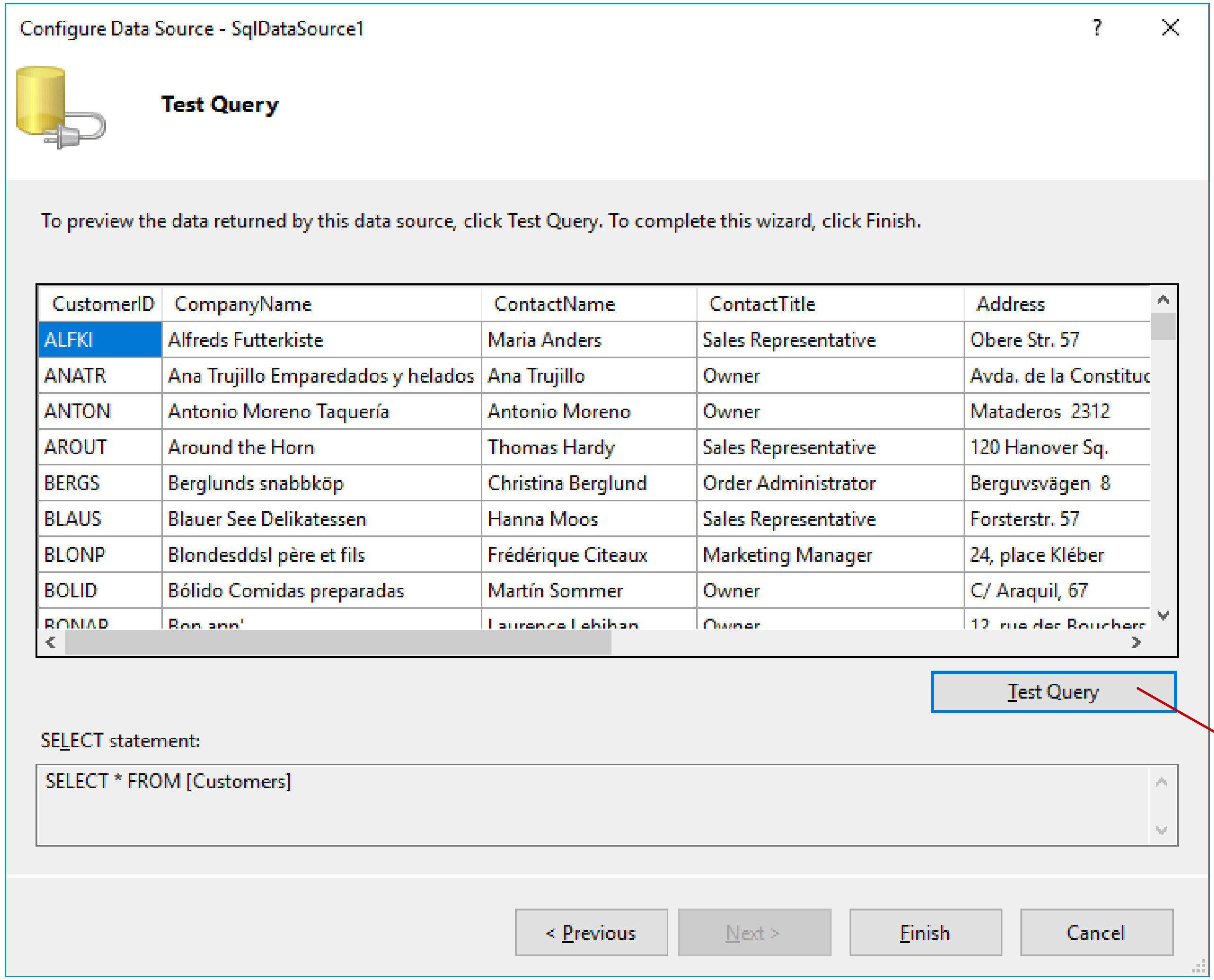
- Alphabetical list of products
- Categories
- Category Sales for 1997
- Current Product List
- Customer and Suppliers by City
- CustomerCustomerDemo
- CustomerDemographics
- Customers
- Employees
- EmployeeTerritories
- Invoices
- Order Details
- Order Details Extended
- Order Subtotals
- Orders
- Orders Qry
- Product Sales for 1997
- Products
- Products Above Average Price
- Products by Category
- Quarterly Orders
- Region
- Sales by Category
- Sales Totals by Amount

Write your own query

WHERE clause

UPDATE, INSERT, DELETE

Demo: SQLDataSource Options (2)



Configure Data Source - SqlDataSource1

Test Query

To preview the data returned by this data source, click Test Query. To complete this wizard, click Finish.

CustomerID	CompanyName	ContactName	ContactTitle	Address
ALFKI	Alfreds Futterkiste	Maria Anders	Sales Representative	Obere Str. 57
ANATR	Ana Trujillo Emparedados y helados	Ana Trujillo	Owner	Avda. de la Constituc
ANTON	Antonio Moreno Taquería	Antonio Moreno	Owner	Mataderos 2312
AROUT	Around the Horn	Thomas Hardy	Sales Representative	120 Hanover Sq.
BERGS	Berglunds snabbköp	Christina Berglund	Order Administrator	Berguvsvägen 8
BLAUS	Blauer See Delikatessen	Hanna Moos	Sales Representative	Forsterstr. 57
BLONP	Blondesddsl père et fils	Frédérique Citeaux	Marketing Manager	24, place Kléber
BOLID	Bólido Comidas preparadas	Martín Sommer	Owner	C/ Araquil, 67
BONAP	Bon app'	Laurence Lebihan	Owner	12, rue des Bouchers

SELECT statement:

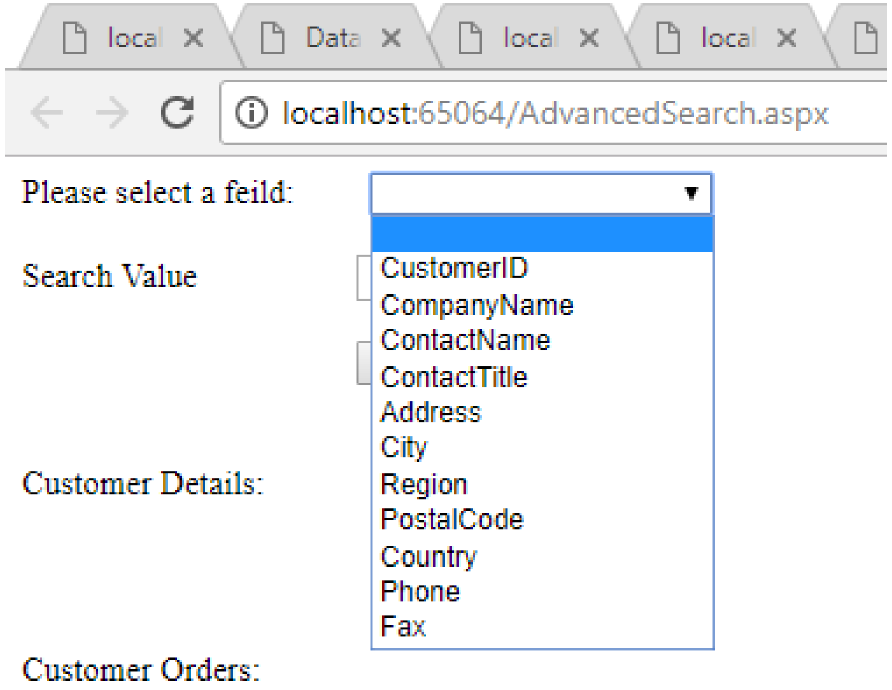
```
SELECT * FROM [Customers]
```

You test your query before finishing

Exercise: AdancedSearch Page

- Add an advanced search page that will load the fields of the customer table into a drop down list.
- A text box to take user search input and a search button.
- Then query the database based on the selected field and return results in a grid view.
- Upon selection of a specific customer load all the orders for that customer in another grid view

Exercise: AdancedSearch Page (snapshots)



Please select a feild:

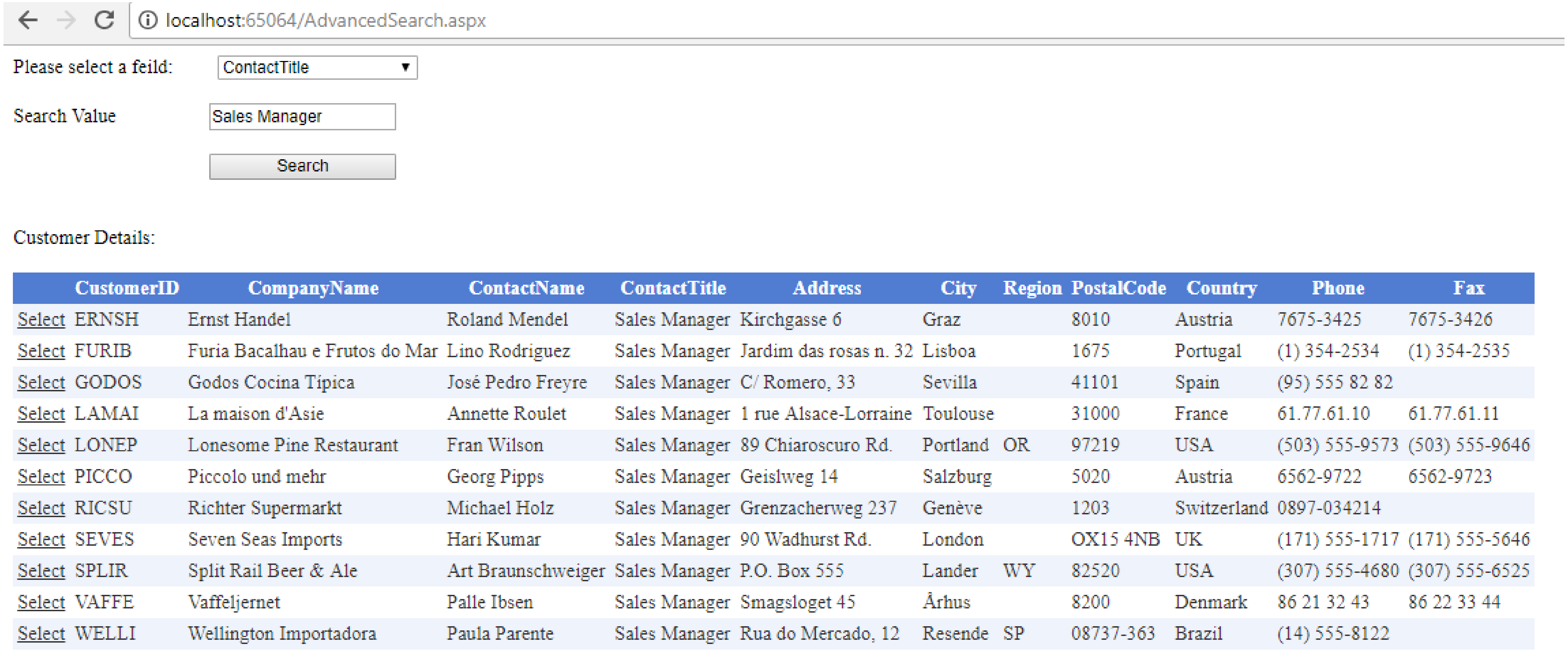
- CustomerID
- CompanyName
- ContactName
- ContactTitle
- Address
- City
- Region
- PostalCode
- Country
- Phone
- Fax

Search Value

Customer Details:

Customer Orders:

Exercise: AdancedSearch Page (snapshots)



localhost:65064/AdvancedSearch.aspx

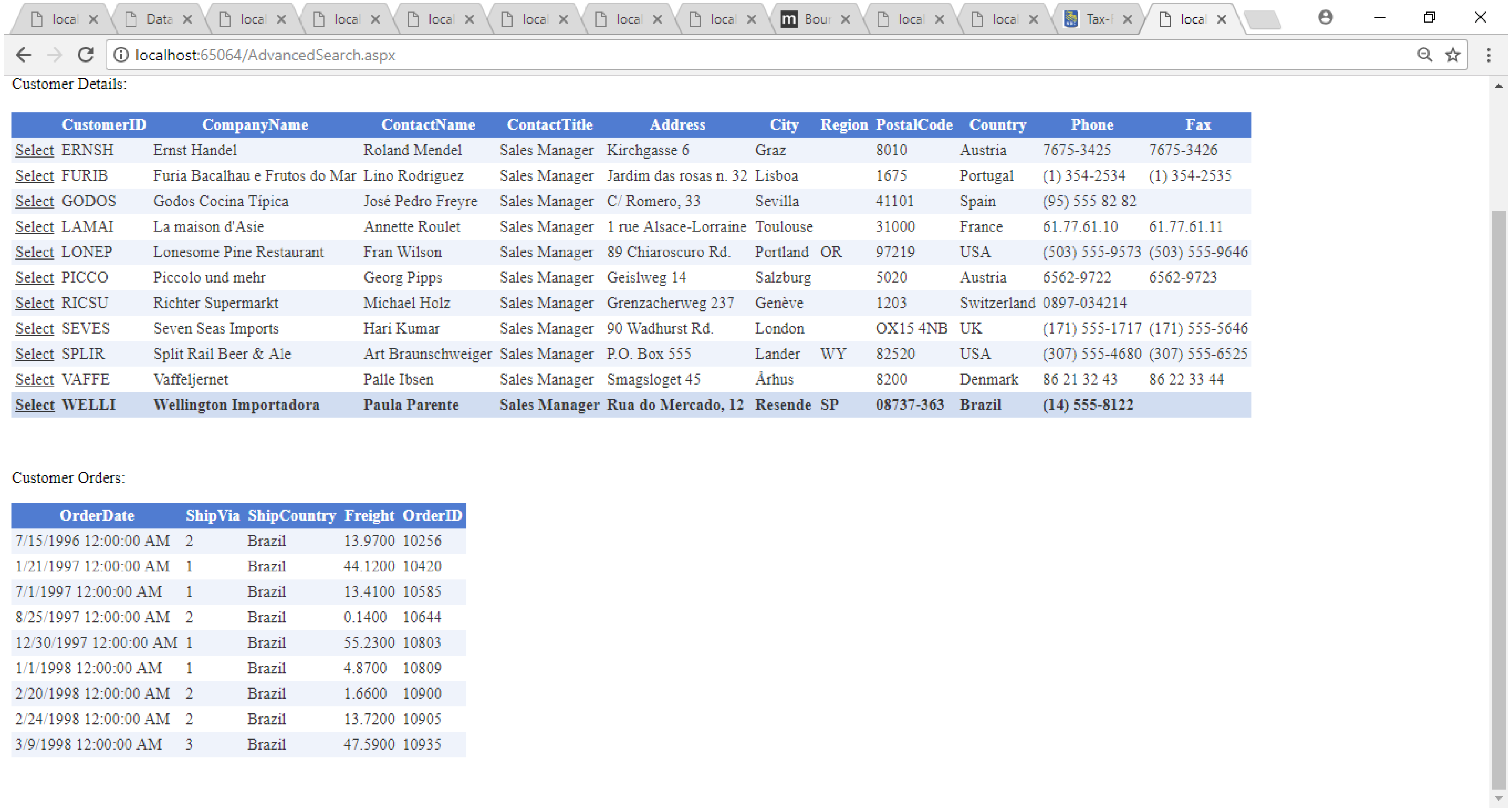
Please select a feild: ContactTitle ▾

Search Value Sales Manager

Customer Details:

	CustomerID	CompanyName	ContactName	ContactTitle	Address	City	Region	PostalCode	Country	Phone	Fax
Select	ERNSH	Ernst Handel	Roland Mendel	Sales Manager	Kirchgasse 6	Graz		8010	Austria	7675-3425	7675-3426
Select	FURIB	Furia Bacalhau e Frutos do Mar	Lino Rodriguez	Sales Manager	Jardim das rosas n. 32	Lisboa		1675	Portugal	(1) 354-2534	(1) 354-2535
Select	GODOS	Godos Cocina Típica	José Pedro Freyre	Sales Manager	C/ Romero, 33	Sevilla		41101	Spain	(95) 555 82 82	
Select	LAMAI	La maison d'Asie	Annette Roulet	Sales Manager	1 rue Alsace-Lorraine	Toulouse		31000	France	61.77.61.10	61.77.61.11
Select	LONEP	Lonesome Pine Restaurant	Fran Wilson	Sales Manager	89 Chiaroscuro Rd.	Portland	OR	97219	USA	(503) 555-9573	(503) 555-9646
Select	PICCO	Piccolo und mehr	Georg Pipps	Sales Manager	Geislweg 14	Salzburg		5020	Austria	6562-9722	6562-9723
Select	RICSU	Richter Supermarkt	Michael Holz	Sales Manager	Grenzacherweg 237	Genève		1203	Switzerland	0897-034214	
Select	SEVES	Seven Seas Imports	Hari Kumar	Sales Manager	90 Wadhurst Rd.	London		OX15 4NB	UK	(171) 555-1717	(171) 555-5646
Select	SPLIR	Split Rail Beer & Ale	Art Braunschweiger	Sales Manager	P.O. Box 555	Lander	WY	82520	USA	(307) 555-4680	(307) 555-6525
Select	VAFFE	Vaffeljernet	Palle Ibsen	Sales Manager	Smagsloget 45	Århus		8200	Denmark	86 21 32 43	86 22 33 44
Select	WELLI	Wellington Importadora	Paula Parente	Sales Manager	Rua do Mercado, 12	Resende	SP	08737-363	Brazil	(14) 555-8122	

Exercise: AdancedSearch Page (snapshots)



Customer Details:

	CustomerID	CompanyName	ContactName	ContactTitle	Address	City	Region	PostalCode	Country	Phone	Fax
Select	ERNSH	Ernst Handel	Roland Mendel	Sales Manager	Kirchgasse 6	Graz		8010	Austria	7675-3425	7675-3426
Select	FURIB	Furia Bacalhau e Frutos do Mar	Lino Rodriguez	Sales Manager	Jardim das rosas n. 32	Lisboa		1675	Portugal	(1) 354-2534	(1) 354-2535
Select	GODOS	Godos Cocina Típica	José Pedro Freyre	Sales Manager	C/ Romero, 33	Sevilla		41101	Spain	(95) 555 82 82	
Select	LAMAI	La maison d'Asie	Annette Roulet	Sales Manager	1 rue Alsace-Lorraine	Toulouse		31000	France	61.77.61.10	61.77.61.11
Select	LONEP	Lonesome Pine Restaurant	Fran Wilson	Sales Manager	89 Chiaroscuro Rd.	Portland	OR	97219	USA	(503) 555-9573	(503) 555-9646
Select	PICCO	Piccolo und mehr	Georg Pipps	Sales Manager	Geislweg 14	Salzburg		5020	Austria	6562-9722	6562-9723
Select	RICSU	Richter Supermarkt	Michael Holz	Sales Manager	Grenzacherweg 237	Genève		1203	Switzerland	0897-034214	
Select	SEVES	Seven Seas Imports	Hari Kumar	Sales Manager	90 Wadhurst Rd.	London		OX15 4NB	UK	(171) 555-1717	(171) 555-5646
Select	SPLIR	Split Rail Beer & Ale	Art Braunschweiger	Sales Manager	P.O. Box 555	Lander	WY	82520	USA	(307) 555-4680	(307) 555-6525
Select	VAFFE	Vaffeljernet	Palle Ibsen	Sales Manager	Smagsloget 45	Århus		8200	Denmark	86 21 32 43	86 22 33 44
Select	**WELLI**	**Wellington Importadora**	**Paula Parente**	**Sales Manager**	**Rua do Mercado, 12**	**Resende**	**SP**	**08737-363**	**Brazil**	**(14) 555-8122**	

Customer Orders:

OrderDate	ShipVia	ShipCountry	Freight	OrderID
7/15/1996 12:00:00 AM	2	Brazil	13.9700	10256
1/21/1997 12:00:00 AM	1	Brazil	44.1200	10420
7/1/1997 12:00:00 AM	1	Brazil	13.4100	10585
8/25/1997 12:00:00 AM	2	Brazil	0.1400	10644
12/30/1997 12:00:00 AM	1	Brazil	55.2300	10803
1/1/1998 12:00:00 AM	1	Brazil	4.8700	10809
2/20/1998 12:00:00 AM	2	Brazil	1.6600	10900
2/24/1998 12:00:00 AM	2	Brazil	13.7200	10905
3/9/1998 12:00:00 AM	3	Brazil	47.5900	10935

Exercise: AdancedSearch Page

- User SQLDataSource

- Hint on loading data fields
  - User a custom query

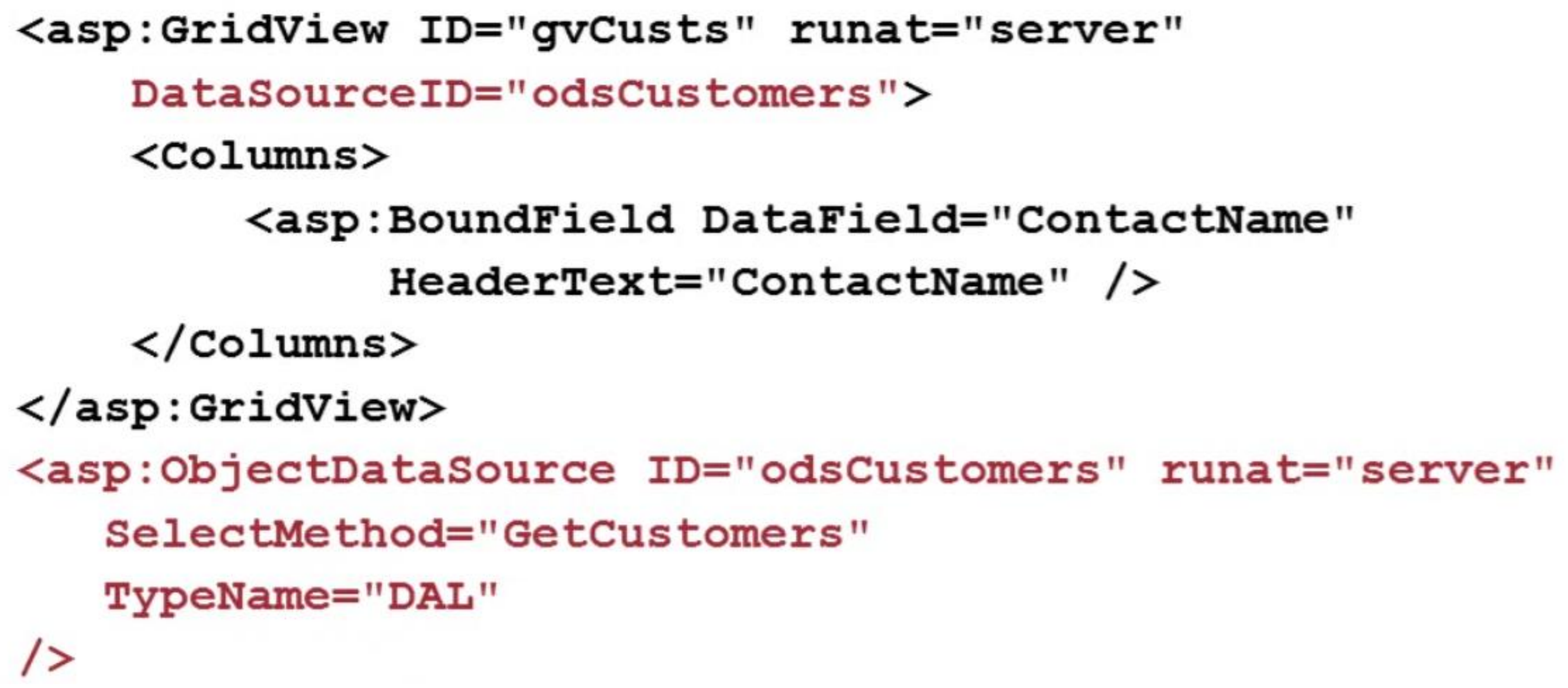
```
SELECT COLUMN_NAME
FROM INFORMATION_SCHEMA.columns
WHERE table_name='Customers'
```

The ObjectDataSource Control

- The ObjectDataSource control provides declarative data binding between objects and controls:
  - Supports binding to custom objects such as business objects
  - Allows for N-Tier/N-Layer architectures that separate presentation, business and data layers
  - Supports paging and sorting
  - Supports select, insert, update and delete operations
  - Provides built-in caching support

Using ObjectDataSource Control

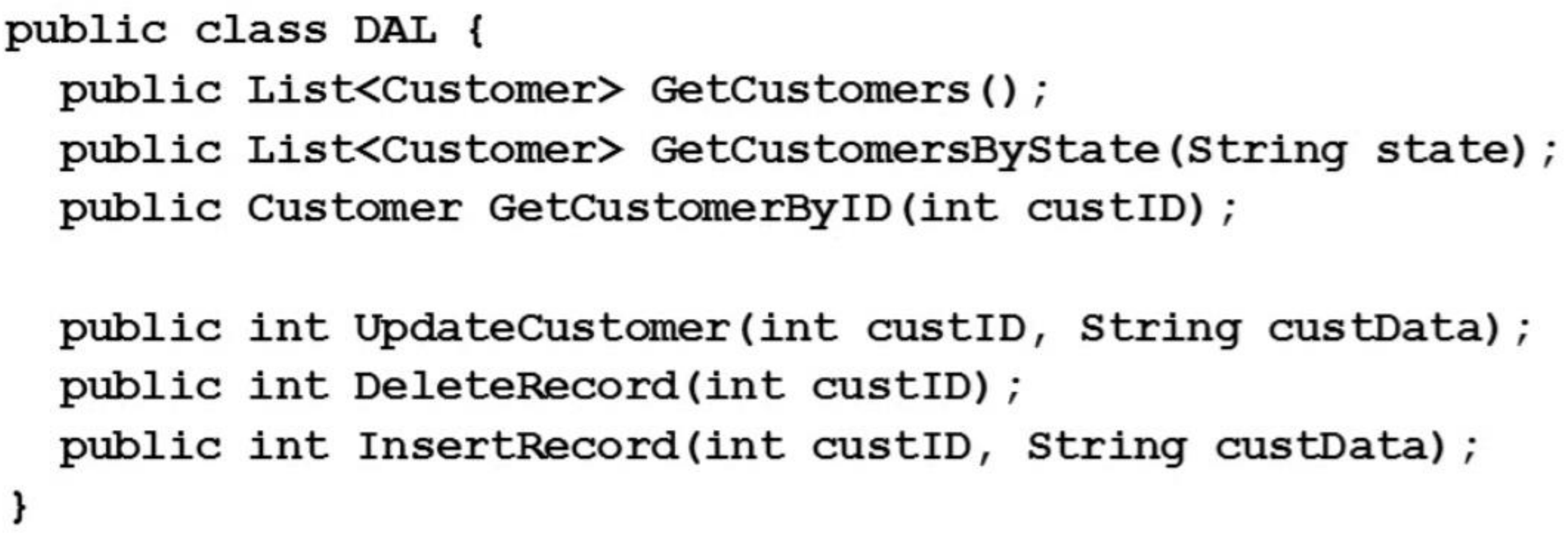
- The ObjectDataSource control allows custom data objects to be bound to ASP .NET controls:



```
<asp:GridView ID="gvCusts" runat="server"
    DataSourceID="odsCustomers">
    <Columns>
        <asp:BoundField DataField="ContactName"
             HeaderText="ContactName" />
    </Columns>
</asp:GridView>
<asp:ObjectDataSource ID="odsCustomers" runat="server"
   SelectMethod="GetCustomers"
   TypeName="DAL"
/>
```

Defining Operations

- Different select, insert, update and delete methods can be defined in business object:



```
public class DAL {
  public List<Customer> GetCustomers();
  public List<Customer> GetCustomersByState(String state);
  public Customer GetCustomerByID(int custID);

  public int UpdateCustomer(int custID, String custData);
  public int DeleteRecord(int custID);
  public int InsertRecord(int custID, String custData);
}
```

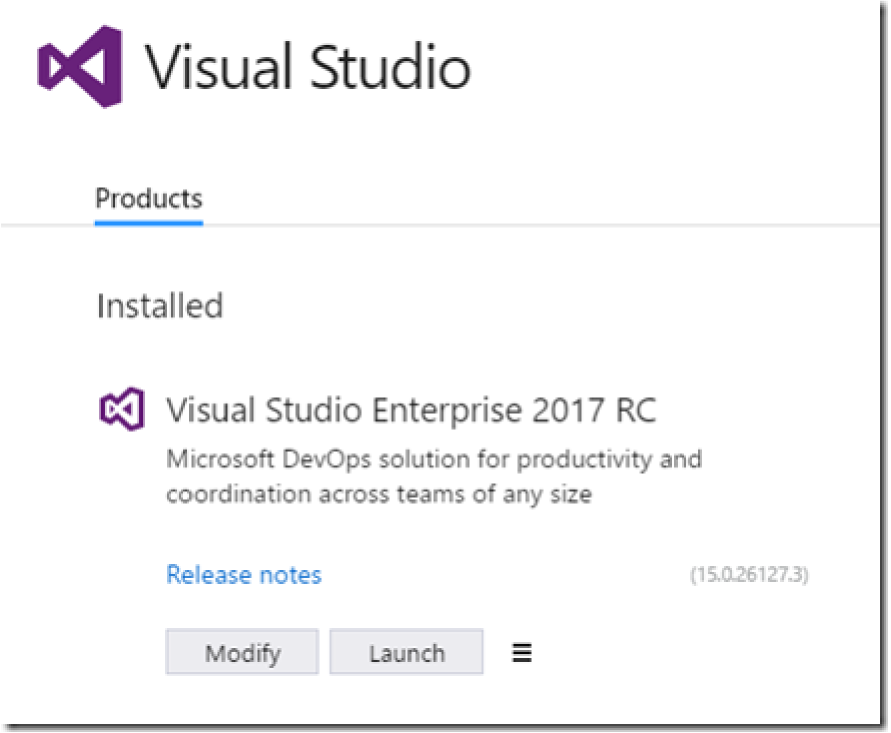
Demo: ObjectDS

- Build a simple page using multiple controls all loading data from SQL Server database.
- Task:
  - Used database: Northwind
  - Add a LINQ to SQL object
  - Create a class to represent the queries needed.
  - Load all countries in the Customers table in the DB into a drop down list.
  - Upon selection of country, load all customers from that country into a GridView
  - Final, select a customer from the grid and view all details in a DetailsView.

Add LINQ to SQL to Visual Studio (1)

- Go to Control Panel
- Programs → Programs and Feature
- Choose: Visual Studio, right click and **Modify (change)**
- One the main setup page loads click on **Modify** (might be under **more**)

Add LINQ to SQL to Visual Studio (2)



Visual Studio

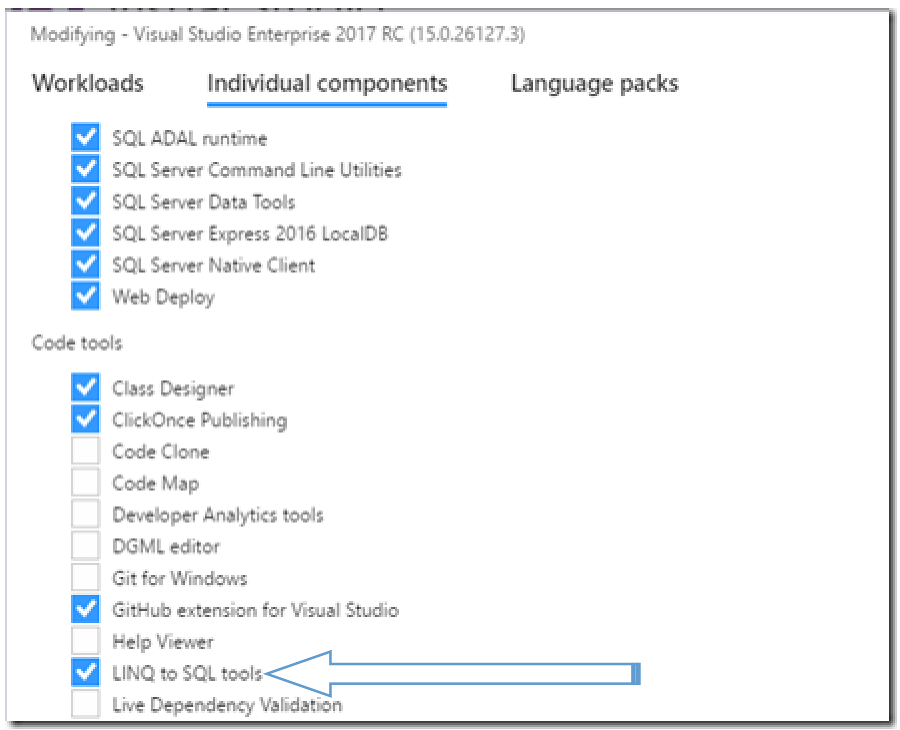
Products

Installed

Visual Studio Enterprise 2017 RC

Microsoft DevOps solution for productivity and coordination across teams of any size

Release notes (15.0.26127.3)



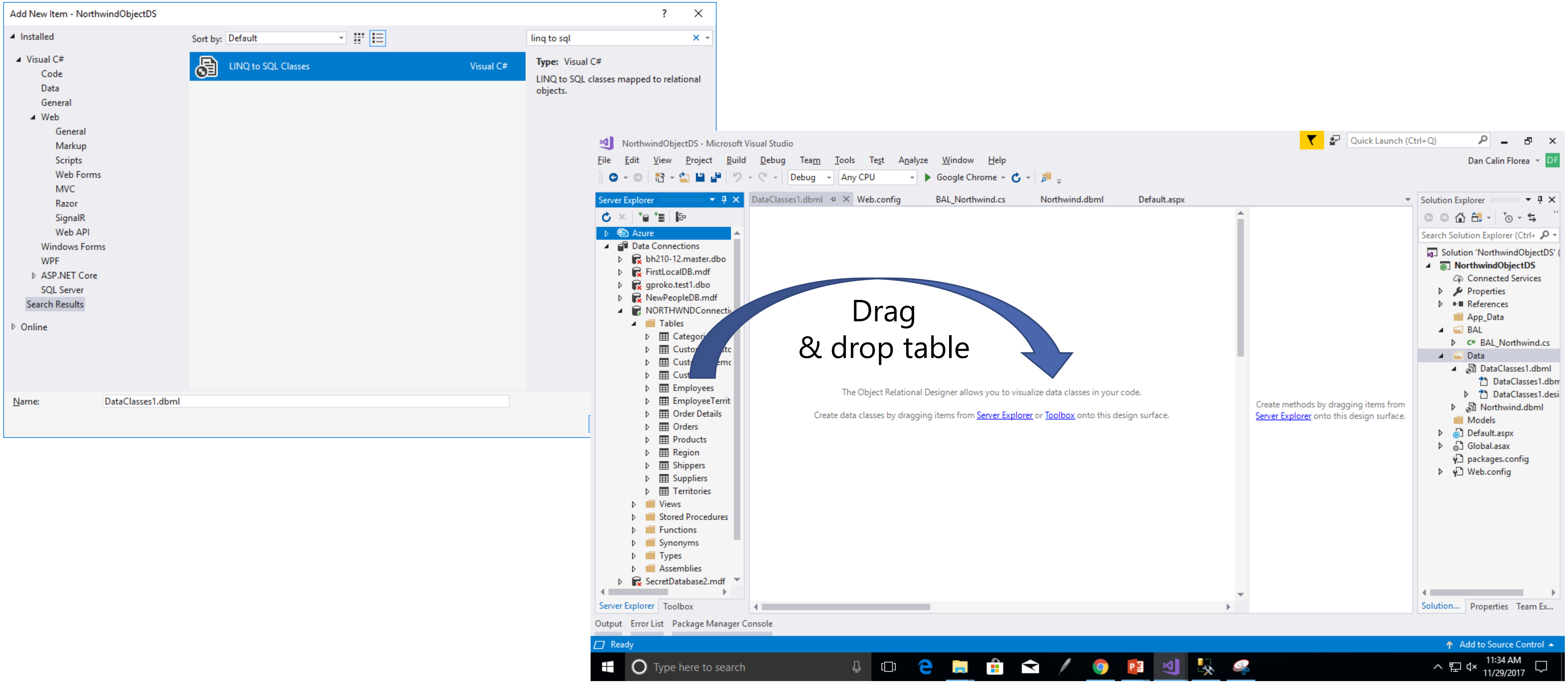
Modifying - Visual Studio Enterprise 2017 RC (15.0.26127.3)

- ☑ SQL ADAL runtime
- ☑ SQL Server Command Line Utilities
- ☑ SQL Server Data Tools
- ☑ SQL Server Express 2016 LocalDB
- ☑ SQL Server Native Client
- ☑ Web Deploy

Code tools

- ☑ Class Designer
- ☑ ClickOnce Publishing
- ☐ Code Clone
- ☐ Code Map
- ☐ Developer Analytics tools
- ☐ DGML editor
- ☐ Git for Windows
- ☑ GitHub extension for Visual Studio
- ☐ Help Viewer
- ☑ LINQ to SQL tools
- ☐ Live Dependency Validation

Demo: Add new item [LINQ to SQL]



Add New Item - NorthwindObjectDS

Sort by: Default

linq to sql

LINQ to SQL Classes Visual C#

Type: Visual C#

LINQ to SQL classes mapped to relational objects.

Name: DataClasses1.dbml

NorthwindObjectDS - Microsoft Visual Studio

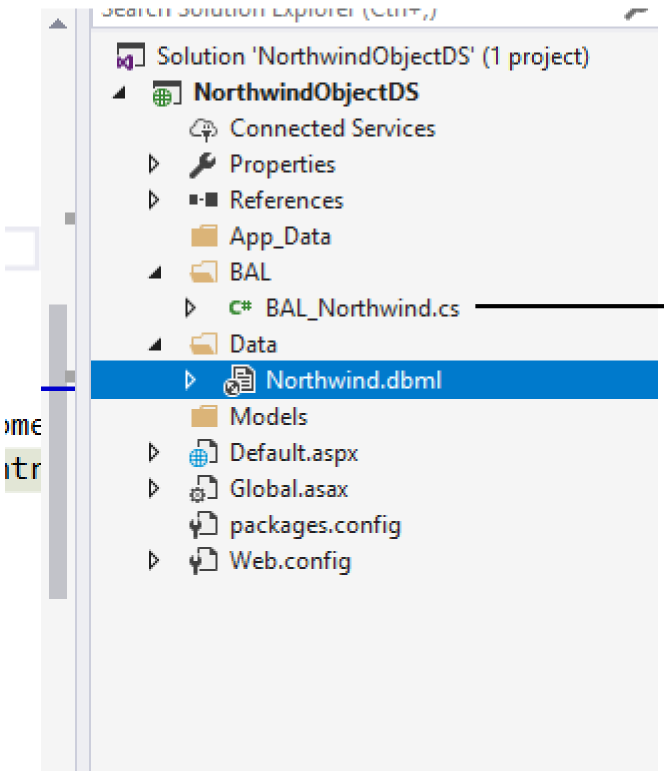
Drag
& drop table

The Object Relational Designer allows you to visualize data classes in your code.

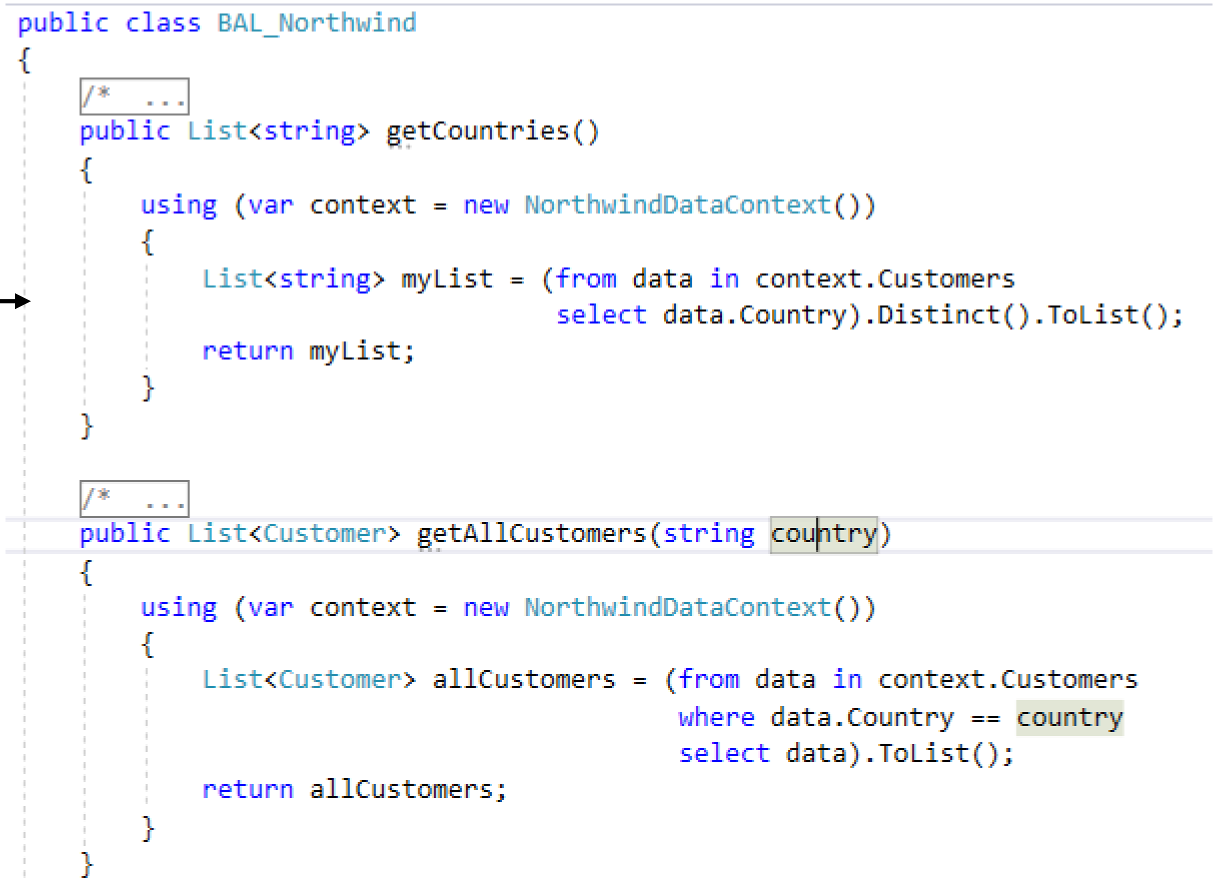
Create data classes by dragging items from Server Explorer or Toolbox onto this design surface.

Create methods by dragging items from Server Explorer onto this design surface.

Demo: Add a business access layer class

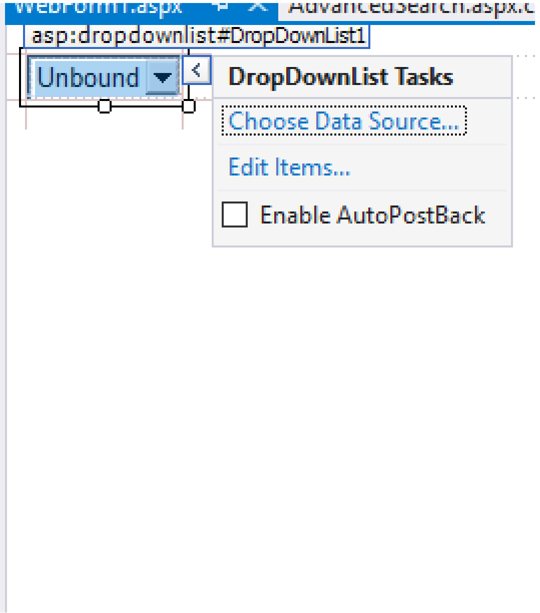


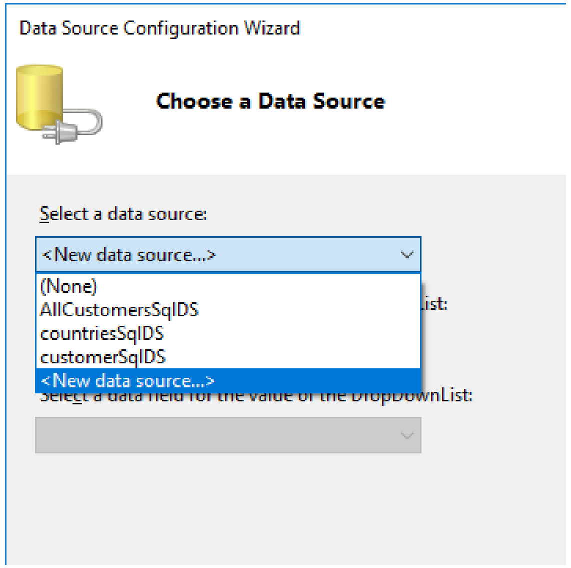
Create a class and write methods to extract data



```
public class BAL_Northwind
{
    /* ...
    public List<string> getCountries()
    {
        using (var context = new NorthwindDataContext())
        {
            List<string> myList = (from data in context.Customers
                                   select data.Country).Distinct().ToList();
            return myList;
        }
    }

    /* ...
    public List<Customer> getAllCustomers(string country)
    {
        using (var context = new NorthwindDataContext())
        {
            List<Customer> allCustomers = (from data in context.Customers
                                           where data.Country == country
                                           select data).ToList();
            return allCustomers;
        }
    }
```

Demo: Add an Object Data Source



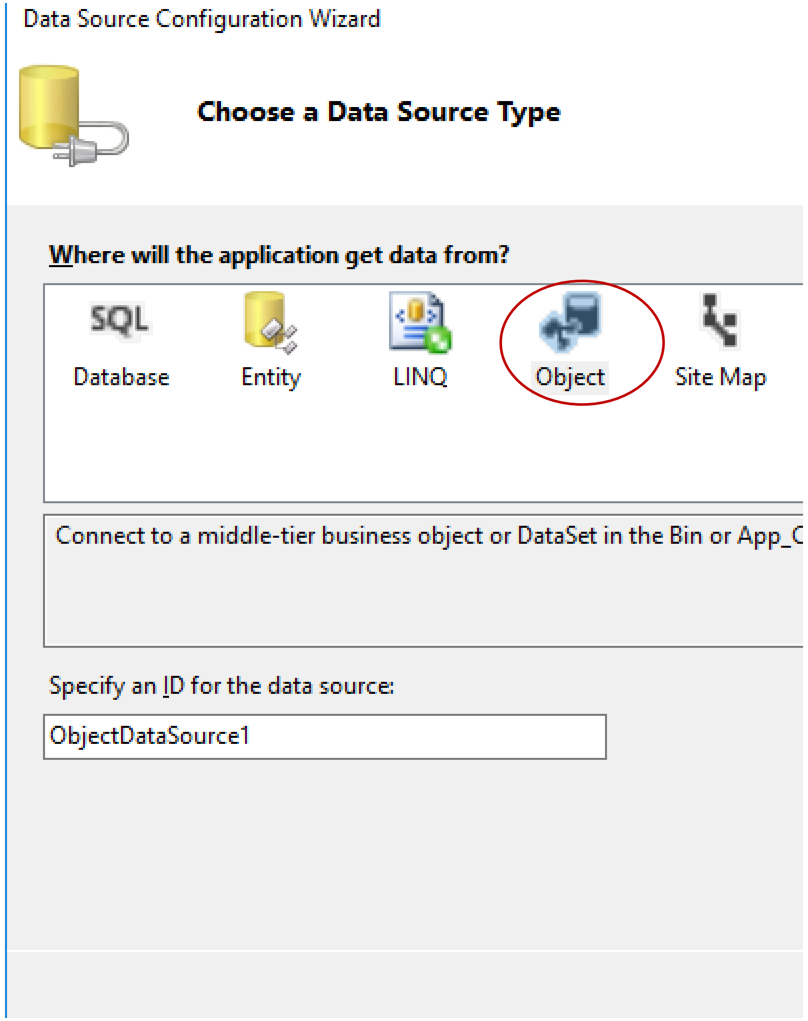


Data Source Configuration Wizard

Choose a Data Source

Select a data source: <New data source...>

Select a data field for the value of the DropDownList:



Data Source Configuration Wizard

Choose a Data Source Type

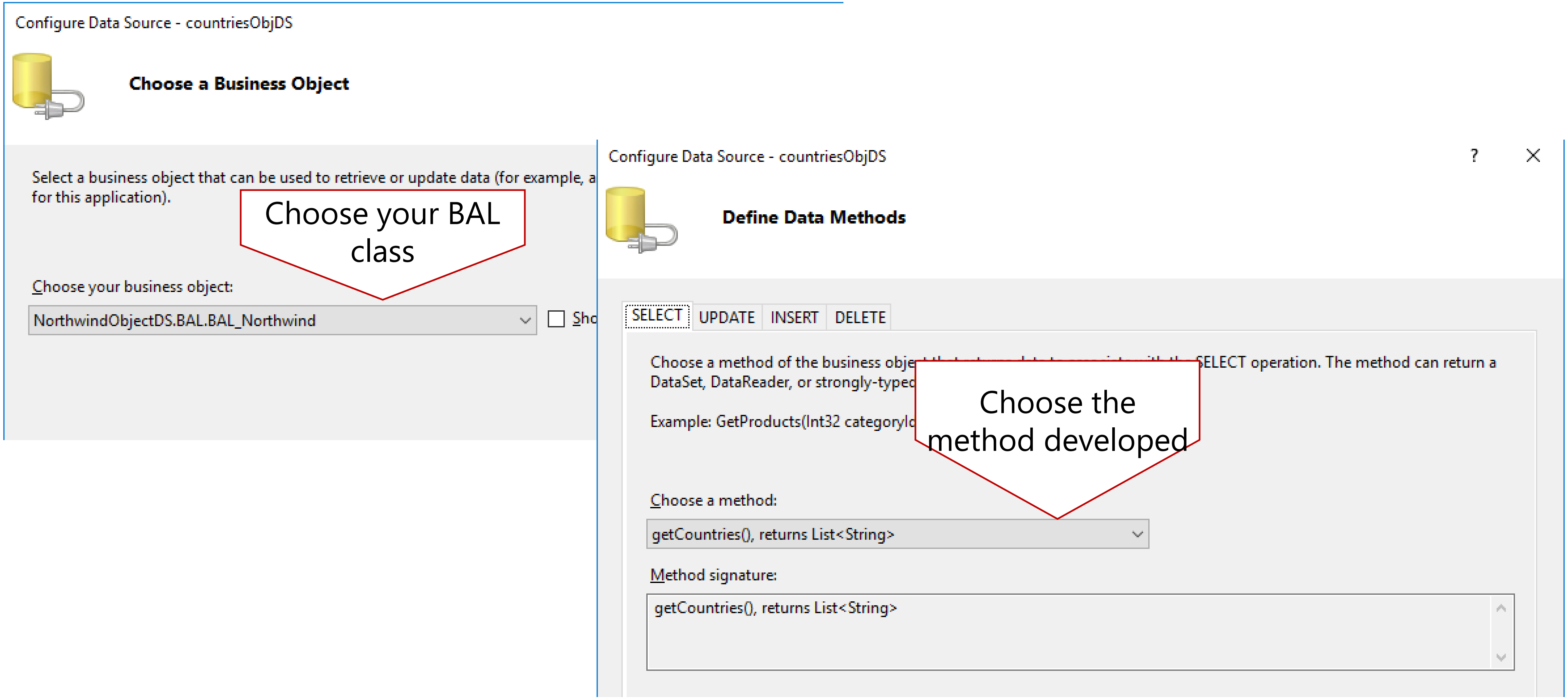
Where will the application get data from?

Connect to a middle-tier business object or DataSet in the Bin or App_C

Specify an ID for the data source: ObjectDataSource1

Choose Data Source → New Data Source

Demo: Load BAL Class



Configure Data Source - countriesObjDS

Choose a Business Object

Select a business object that can be used to retrieve or update data (for example, a
for this application).

Choose your BAL class

Choose your business object:

NorthwindObjectDS.BAL.BAL_Northwind

□ Sho

Configure Data Source - countriesObjDS

Define Data Methods

Choose a method of the business obje SELECT operation. The method can return a
DataSet, DataReader, or strongly-typed

Example: GetProducts(Int32 categoryId

Choose the method developed

Choose a method:

getCountries(), returns List<String>

Method signature:

getCountries(), returns List<String>

Q & A

JOHN ABBOTT
CEGEP/COLLEGE