Lesson 18: Northwind Store

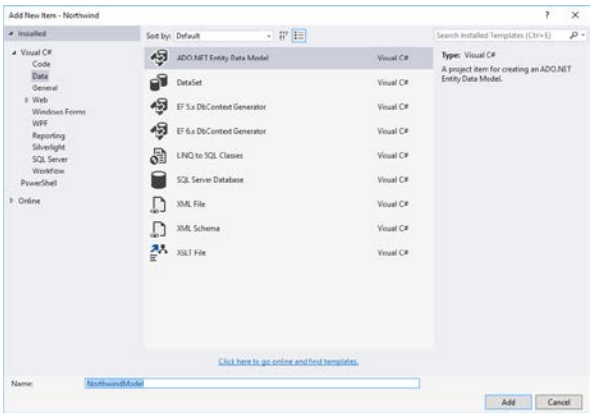
In this lesson, we will begin creating an enterprise level web application using the Northwnd database from Microsoft. We will utilize database-first entity design for this project.

Agenda

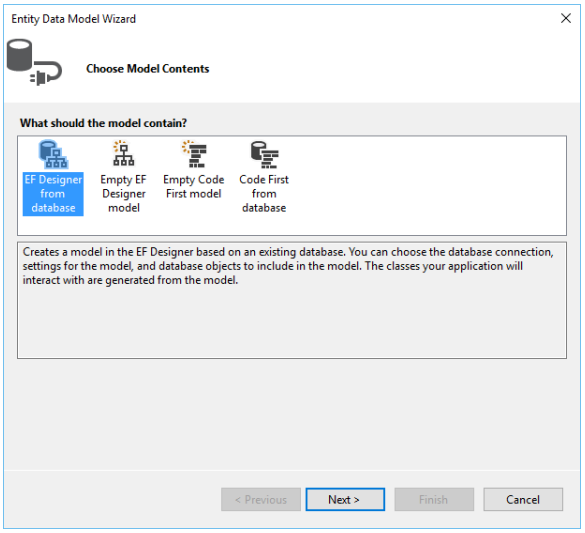
1. Demonstration
2. Lab/Homework

Demonstration

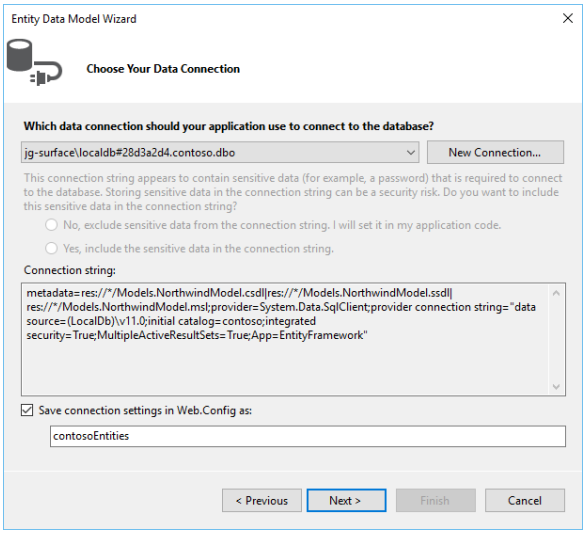
1. Open the **Northwind** project.
2. In Visual Studio, right-click the **Models** folder in the Solution Explorer. Select **Add – New Item**.
3. In the Add New Item dialog, choose the **Data – ADO.NET Entity Data Model**. Enter **NorthwindModel** as the name. Click **Add**.



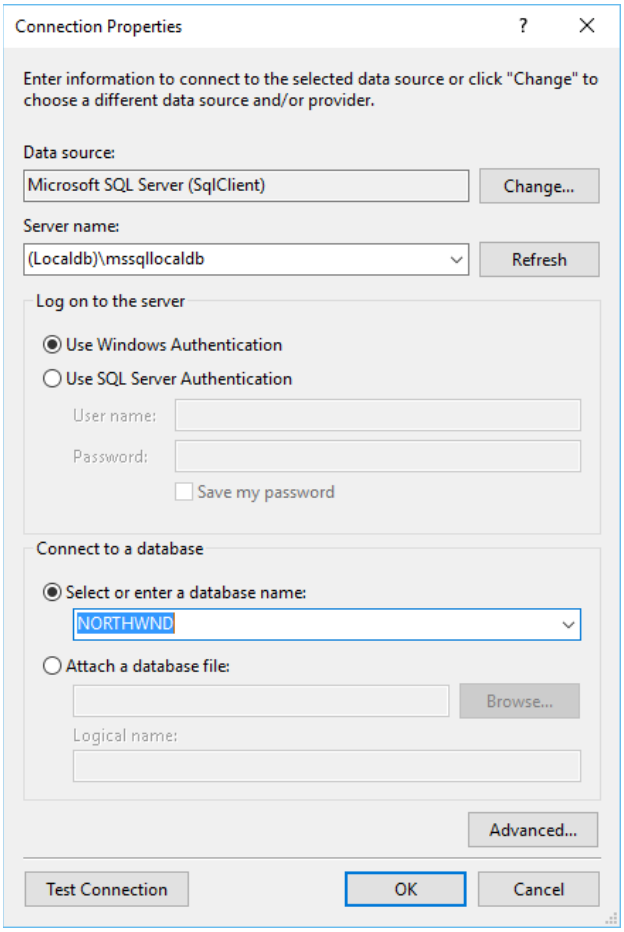
4. Select **EF Designer from database**. Click **Next**.



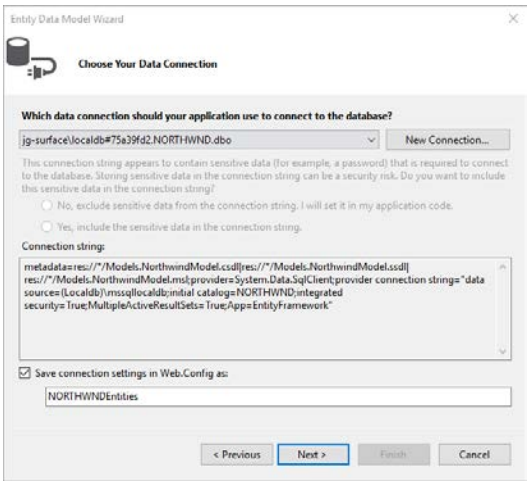
5. Click **New Connection**.



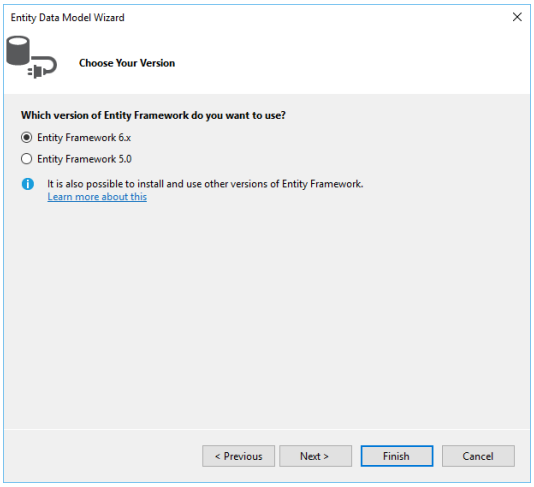
6. In the Connection Properties dialog, enter the **server name** and select the **database**. Click **OK**.



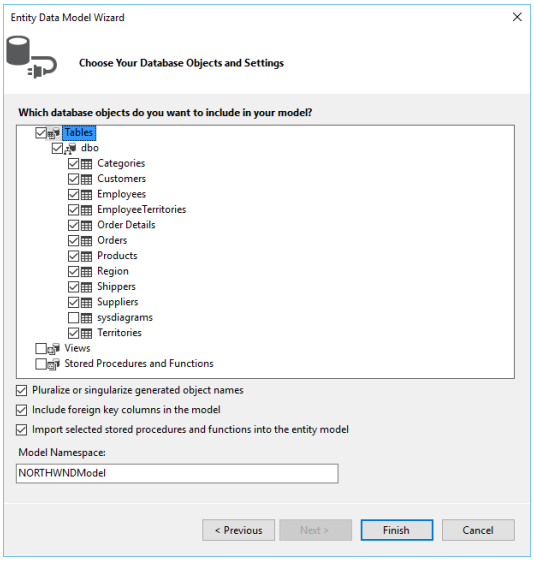
7. Note the connections string name. Click **Next**. We will use this later. This is the conduit between our controller class and our data using the Entity Framework.



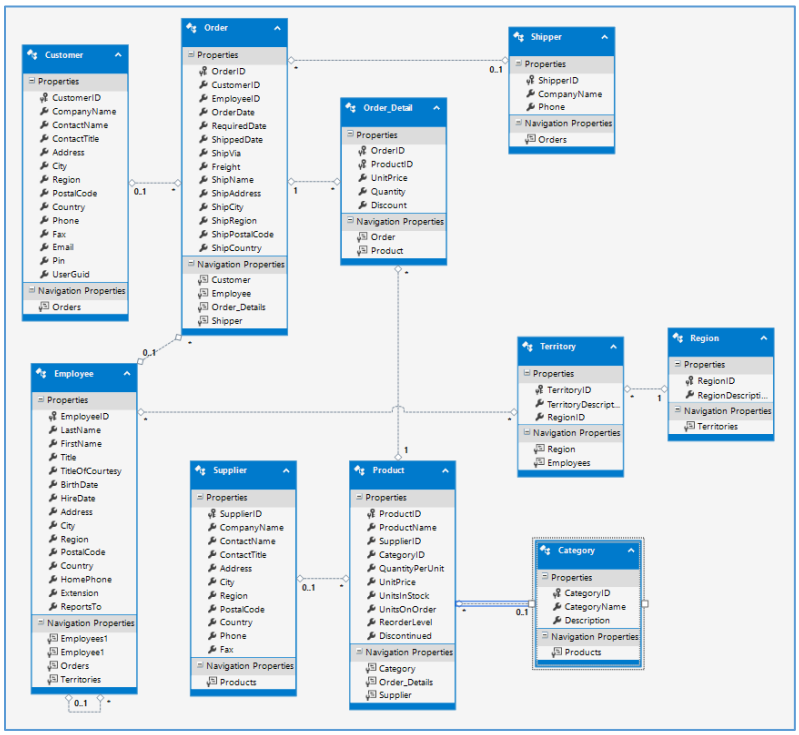
8. Select the Entity Framework version. Click **Next**.



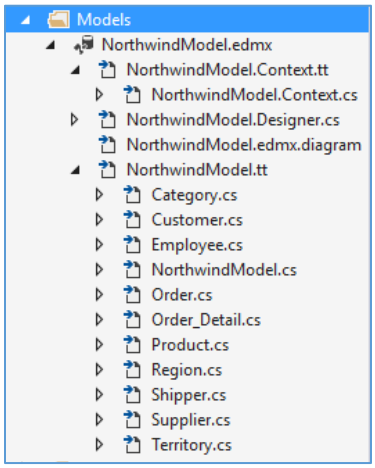
9. Select all Tables (except sysdiagrams). Click **Finish**.



10. Examine the database schema.



11. Examine the model classes created from the database. In today's lesson, we will be using the Product and Category tables. There is a 1-to-many relationship between the tables (a product can belong to 1 category, a category can contain many products).



12. Open the Product controller. Add the Northwind.Models namespace to the controller.

```
using Northwind.Models;
```

13. Let's create a list all of the Product Categories. We utilize LINQ to access our data. Notice the NORTHWNDEntities class. This is the conduit between our controller class and our data. We now have access to all of the data model classes and the database using the Entity Framework.

```
// GET: Product/Category
public ActionResult Category()
{
   // retrieve a list of all categories
   using(NORTHWNDEntities db = new NORTHWNDEntities()) {
       return View(db.Categories.ToList());
   }
}
```

14. That's all we need. We are passing a list of Categories to the View. Set a breakpoint and debug.

```
10  public class ProductController : Controller
11  {
12      // GET: Product/Category
13      public ActionResult Category()
14      {
15          // retrieve a list of all categories
16          using(NORTHWNDEntities db = new NORTHWNDEntities()) {
17              return View(db.Categories.ToList());
18          }
19      }
```

15. The last thing we should do is sort the list by name. Modify the return statement. Test in browser.

```
return View(db.Categories.OrderBy(c => c.CategoryName).ToList());
```

16. Open the Views/Product/Category view. Import the Northwind.Models namespace and add the model to the view.

```
@using Northwind.Models
@model IEnumerable<Category>
```

17. Modify the title, iterate thru the Category collection and add a link back to the home page. Test in browser.

```
@{
   ViewBag.Title = "Products";
}

<ul>
   @foreach (Category c in @Model)
   {
      <li>@c.CategoryName</li>
   }
</ul>
<div class="font-md">
   <a href="~/Home/Index"><i class="fa fa-home"></i> Home</a>
</div>
```

18. Let's spiff up the page a bit. Replace the ul with a Bootstrap list-group. Notice we are displaying the category name and the category description. Test in browser.

```
<div class="font-md">Product Categories</div>
<!-- List group -->
<div class="list-group">
   @foreach (Category c in Model)
   {
      <a href="#" class="list-group-item">
         <strong>@c.CategoryName</strong> - @c.Description
      </a>
   }
</div>

<div class="font-md">
    <a href="~/Home/Index"><i class="fa fa-home"></i> Home</a>
</div>
```

19. Ultimately, clicking a category in the list should open a view that displays the products from that category. Modify the href attribute. Notice we are passing the CategoryID to the Controller.

```
href="~/Product/Product/@c.CategoryID">
```

20. Open the Product Controller. Import the System.Net namespace and add the Product method. Create the related Product view. Test in browser.

```
// GET: Product/Product/1
public ActionResult Product(int? id)
{
   // if there is no "category" id, return Http Bad Request
   if (id == null)
   {
      return new HttpStatusCodeResult(HttpStatusCode.BadRequest);
   }
   return View();
}
```

21. Pass a list of products to the View and save the category to the ViewBag. Replace the return statement.

```
using (NORTHWNDEntities db = new NORTHWNDEntities())
{
   // save the selected category name to the ViewBag
   ViewBag.Filter = db.Categories.Find(id).CategoryName;
   // retrieve list of products
   return View(db.Products.ToList());
}
```

22. Modify the Views\Product\Product view. Test in browser.

```
@using Northwind.Models
@model IEnumerable<Product>

@{
   ViewBag.Title = "Product";
}

<ul>
   @foreach(Product p in Model)
   {
      <li>@p.ProductName</li>
   }
</ul>
```

23. We have not yet accessed the ViewBag.CategoryName. We will use that later.

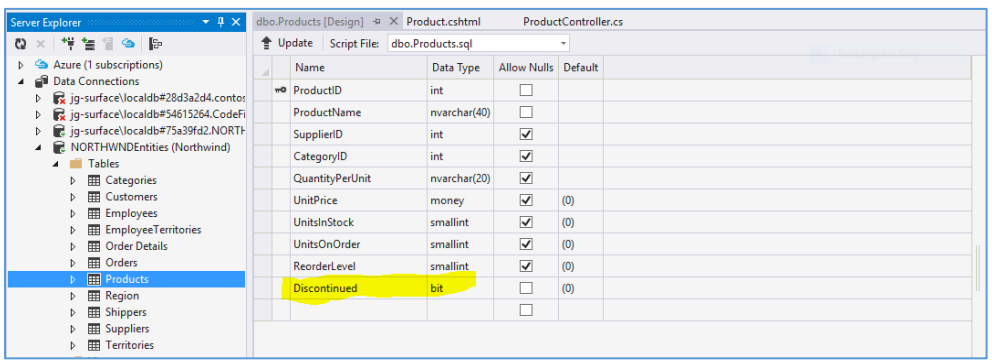
24. This is an unfiltered, unsorted list of all products. Let's sort the list by product name. Open the Product Controller and modify the return statement. Test in browser.

```
return View(db.Products.OrderBy(p => p.ProductName).ToList());
```

25. This is a sorted list of all products. Next we will filter the list using the selected category. Modify the return statement. Test in browser.

```
return View(db.Products.Where(p => p.CategoryID == id).OrderBy(p =>
p.ProductName).ToList());
```

26. This is almost perfect. If we examine the Products table closely, we see a Boolean field to indicate discontinued products. We don't want to display discontinued products here. We need to filter our list to exclude discontinued products.



27. Modify the return statement. Test in Browser.

```
return View(db.Products.Where(p => p.CategoryID == id && p.Discontinued ==
false).OrderBy(p => p.ProductName).ToList());
```

28. Let's spiff up the display a bit now. Open the Views\Product\Product view and replace the ul with a table and add a link back to the Category List.

```
<table class="table table-hover table-responsive">
   <thead>
      <tr class="font-md">
         <th>@ViewBag.Filter</th>
         <th class="text-right">
            Price
         </th>
         <th class="text-right">
            Stock
         </th>
      </tr>
   </thead>
   <tbody>
```

```
      @foreach (Product p in Model)
      {
         <tr class="product-row" id="@p.ProductID">
            <td>@p.ProductName (@p.QuantityPerUnit)</td>
            <td class="text-right">@string.Format("{0:c}", p.UnitPrice)</td>
            <td class="text-right">@p.UnitsInStock</td>
         </tr>
      }
   </tbody>
</table>

<div class="font-md">
   <a href="~/Product/Category"><i class="fa fa-list"></i> Product Categories</a>
</div>
```

29. Ultimately, when a product is selected, we will add it to the customer's shopping basket. For now, let's display a javascript alert when a product is selected. **Notice the id attribute of each row in tbody.** Add the scripts section after the Product Categories link.

```
@section scripts
{
   <script>
      $(function () {
         $('.product-row').click(function () {
            alert(this.id);
         });
      });
   </script>
}
```

30. Clicking a product's row will now display the ProductID of that product. Notice the cursor when you hover your mouse over a row. We want the cursor to be the same as if you were hovering over an anchor tag. Open the Content\Site.css. Add the product-row class selector. Test in browser.

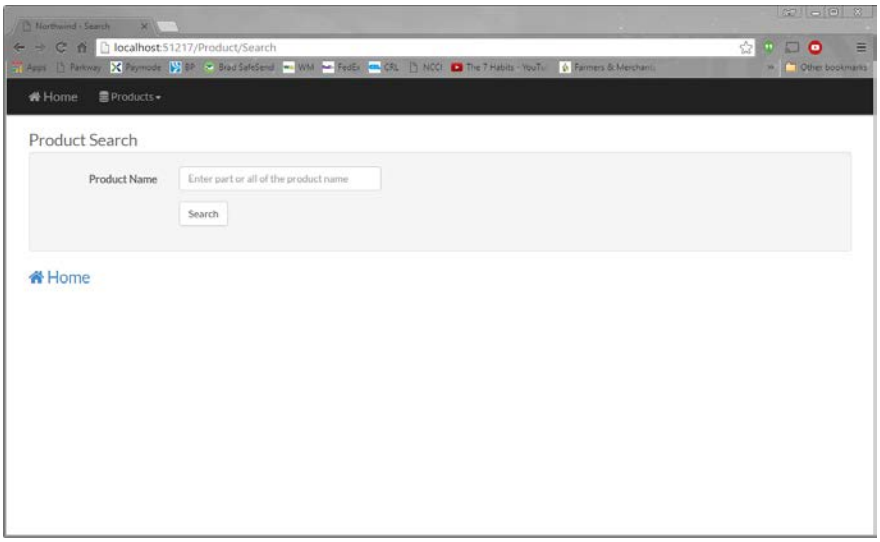
```
.product-row{ cursor:pointer; }
```

Homework

REMINDER: AZURE Account

Implement the product search feature. This will be similar to the demonstration from today. Instead of filtering the list of products by category, you will be filtering by product name using LINQ's Contains method.

1) First, create a new controller method in the Product controller.
2) Create the related search view (see below).



3) Prevent Cross Site Request Forgery (CSRF) attacks by implementing AntiForgeryToken() helper. Read the following article for an explanation. http://blog.stevensanderson.com/2008/09/01/prevent-cross-site-request-forgery-csrf-using-aspnet-mvcs-antiforgerytoken-helper/. The article does a good job of explaining CSRF and the AntiForgeryToken() helper, however, the sample code is NOT Razor. See below for a code example in Razor.

View:

```
<form method="post" action="~/Product/SearchResults">
 @Html.AntiForgeryToken()
   …
</form>
```

Controller:

```
[HttpPost]
[ValidateAntiForgeryToken]
public ActionResult SearchResults(FormCollection Form)
{
   …
}
```

4) Results should be displayed in THE SAME VIEW as in the lesson (Product.cshtml).