

Using LINQ to SQL (Part 1)

Over the last few months I wrote a series of blog posts that covered some of the new language features that are coming with the Visual Studio and .NET Framework "Orcas" release. Here are pointers to the posts in my series:

- [Automatic Properties, Object Initializer and Collection Initializers](#)
- [Extension Methods](#)
- [Lambda Expressions](#)
- [Query Syntax](#)
- [Anonymous Types](#)

The above language features help make *querying data* a first class programming concept. We call this overall querying programming model "LINQ" - which stands for *.NET Language Integrated Query*.

Developers can use LINQ with any data source. They can express efficient query behavior in their programming language of choice, optionally transform/shape data query results into whatever format they want, and then easily manipulate the results. LINQ-enabled languages can provide full type-safety and compile-time checking of query expressions, and development tools can provide full intellisense, debugging, and rich refactoring support when writing LINQ code.

LINQ supports a very rich extensibility model that facilitates the creation of very efficient domain-specific operators for data sources. The "Orcas" version of the .NET Framework ships with built-in libraries that enable LINQ support against Objects, XML, and Databases.

What Is LINQ to SQL?

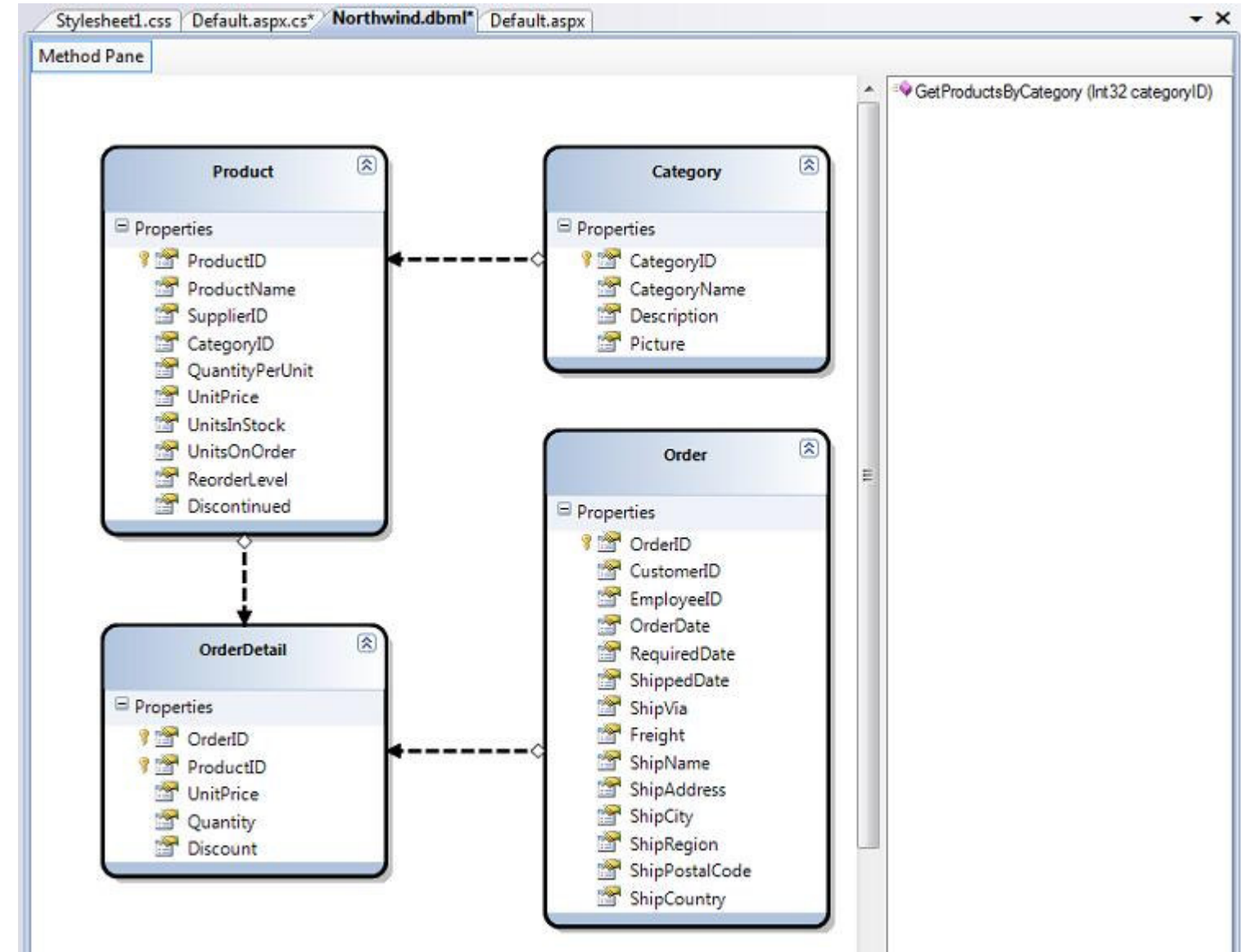
LINQ to SQL is an [O/RM](#) (object relational mapping) implementation that ships in the .NET Framework "Orcas" release, and which allows you to model a relational database using .NET classes. You can then query the database using LINQ, as well as update/insert/delete data from it.

LINQ to SQL fully supports transactions, views, and stored procedures. It also provides an easy way to integrate data validation and business logic rules into your data model.

Modeling Databases Using LINQ to SQL:

Visual Studio "Orcas" ships with a LINQ to SQL designer that provides an easy way to model and visualize a database as a LINQ to SQL object model. My next blog post will cover in more depth how to use this designer (you can also [watch this video](#) I made in January to see me build a LINQ to SQL model from scratch using it).

Using the LINQ to SQL designer I can easily create a representation of the sample "Northwind" database like below:



My LINQ to SQL design-surface above defines four entity classes: Product, Category, Order and OrderDetail. The properties of each class map to the columns of a corresponding table in the database. Each instance of a class entity represents a row within the database table.

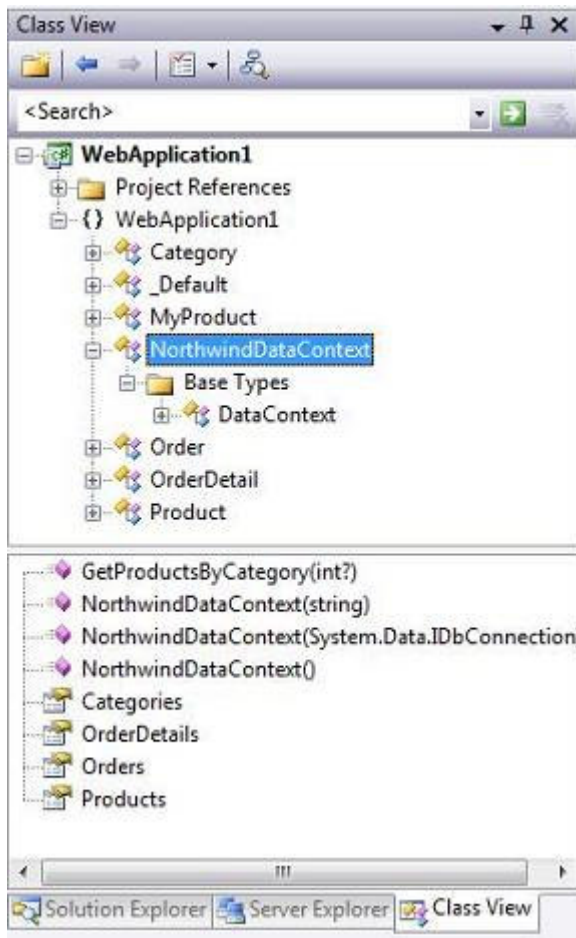
The arrows between the four entity classes above represent associations/relationships between the different entities. These are typically modeled using primary-key/foreign-key relationships in the database. The direction of the arrows on the design-surface indicate whether the association is a one-to-one or one-to-many relationship. Strongly-typed properties will be added to the entity classes based on this. For example, the Category class above has a one-to-many relationship with the Product class. This means it will have a "Categories" property which is a collection of Product objects within that category. The Product class then has a "Category" property that points to a Category class instance that represents the Category to which the Product belongs.

The right-hand method pane within the LINQ to SQL design surface above contains a list of stored procedures that interact with our database model. In the sample above I added a single "GetProductsByCategory" SPROC. It takes a categoryId as an input argument, and returns a sequence of Product entities as a result. We'll look at how to call this SPROC in a code sample below.

Understanding the DataContext Class

When you press the "save" button within the LINQ to SQL designer surface, Visual Studio will persist out .NET classes that represent the entities and database relationships that we modeled. For each LINQ to SQL designer file added to our solution, a custom DataContext class will also be generated. This DataContext class is the main conduit by which we'll query entities from the database as well as apply changes. The DataContext class created will have properties that represent each Table we modeled within the database, as well as methods for each Stored Procedure we added.

For example, below is the NorthwindDataContext class that is persisted based on the model we designed above:



LINQ to SQL Code Examples

Once we've modeled our database using the LINQ to SQL designer, we can then easily write code to work against it. Below are a few code examples that show off common data tasks:

1) Query Products From the Database

The code below uses LINQ query syntax to retrieve an IEnumerable sequence of Product objects. Note how the code is querying across the Product/Category relationship to only retrieve those products in the "Beverages" category:

C#:

```
NorthwindDataContext db = new NorthwindDataContext();

var products = from p in db.Products
               where p.Category.CategoryName == "Beverages"
               select p;
```

VB:

```
Dim db As New NorthwindDataContext

Dim products = From p In db.Products _
               where p.Category.CategoryName = "Beverages" _
               select p
```

2) Update a Product in the Database

The code below demonstrates how to retrieve a single product from the database, update its price, and then save the changes back to the database:

C#:

```
NorthwindDataContext db = new NorthwindDataContext();

Product product = db.Products.Single(p => p.ProductName == "Toy 1");

product.UnitPrice = 99;
product.UnitsInStock = 5;

db.SubmitChanges();
```

VB:

```
Dim db As New NorthwindDataContext

Dim product = (From p In db.Products _
               where p.ProductName = "Toy 1" _
               select p).Single

product.UnitPrice = 99
product.UnitsInStock = 5

db.SubmitChanges()
```

Note: VB in "Orcas" Beta1 doesn't support Lambdas yet. It will, though, in Beta2 - at which point the above query can be rewritten to be more concise.

3) Insert a New Category and Two New Products into the Database

The code below demonstrates how to create a new category, and then create two new products and associate them with the category. All three are then saved into the database.

Note below how I don't need to manually manage the primary key/foreign key relationships. Instead, just by adding the Product objects into the category's "Products" collection, and then by adding the Category object into the DataContext's "Categories" collection, LINQ to SQL will know to automatically persist the appropriate PK/FK relationships for me.

C#

```
NorthwindDataContext db = new NorthwindDataContext();

// Create new Category and Products

Category category = new Category();
category.CategoryName = "Scott's Toys";

Product product1 = new Product();
product1.ProductName = "Toy 1";

Product product2 = new Product();
product2.ProductName = "Toy 2";

// Associate Products with Category

category.Products.Add(product1);
category.Products.Add(product2);

// Add category to database and save changes

db.Categories.Add(category);
db.SubmitChanges();
```

VB:

```
Dim db As New NorthwindDataContext

' Create New Category and Products

Dim category As New Category
category.CategoryName = "Scott's Toys"

Dim product1 As New Product
product1.ProductName = "Toy 1"

Dim product2 As New Product
product2.ProductName = "Toy 2"

' Associate Products with Category

category.Products.Add(product1)
category.Products.Add(product2)

' Add category to database and save changes

db.Categories.Add(category)
db.SubmitChanges()
```

4) Delete Products from the Database

The code below demonstrates how to delete all Toy products from the database:

C#:

```
NorthwindDataContext db = new NorthwindDataContext();

var toyProducts = from p in db.Products
                  where p.ProductName.Contains("Toy")
                  select p;

db.Products.RemoveAll(toyProducts);

db.SubmitChanges();
```

VB:

```
Dim db As New NorthwindDataContext

Dim toyProducts = From p In db.Products _
                  where p.Category.CategoryName.Contains("Toy") _
                  select p

db.Products.RemoveAll(toyProducts)

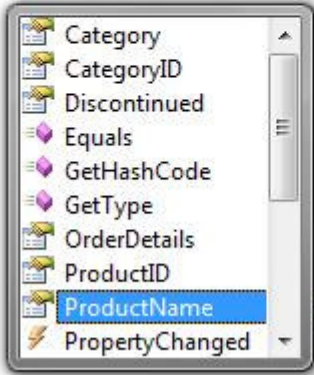
db.SubmitChanges()
```

5) Call a Stored Procedure

The code below demonstrates how to retrieve Product entities not using LINQ query syntax, but rather by calling the "GetProductsByCategory" stored procedure we added to our data model above. Note that once I retrieve the Product results, I can update/delete them and then call db.SubmitChanges() to persist the modifications back to the database.

C#:

```
NorthwindDataContext db = new NorthwindDataContext();
var products = db.GetProductsByCategory(5);
foreach (Product product in products)
{
    product.
```

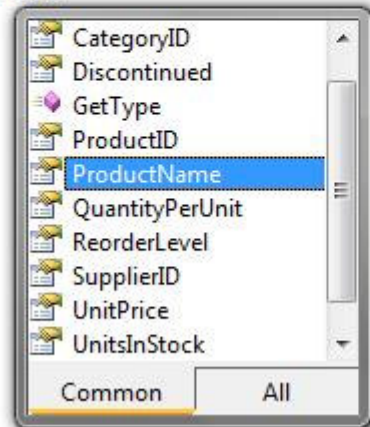


string Product.ProductName

VB:

```
Dim db As New NorthwindDataContext
Dim products = db.GetProductsByCategory(5)
For Each product In products
    product.
```

Next



Public Property ProductName() As String

6) Retrieve Products with Server Side Paging

The code below demonstrates how to implement efficient server-side database paging as part of a LINQ query. By using the Skip() and Take() operators below, we'll only return 10 rows from the database - starting with row 200.

C#:

```
NorthwindDataContext db = new NorthwindDataContext();
var products = (from p in db.Products
                where p.Category.CategoryName.StartsWith("C")
                select p).Skip(200).Take(10);
```

VB:

```
Dim db As New NorthwindDataContext
Dim products = (From p In db.Products _
                where p.Category.CategoryName.StartsWith("C") _
                select p).Skip(200).Take(10)
```


Summary

LINQ to SQL provides a nice, clean way to model the data layer of your application. Once you've defined your data model you can easily and efficiently perform queries, inserts, updates and deletes against it.

Hopefully the above introduction and code samples have helped whet your appetite to learn more. Over the next few weeks I'll be continuing this series to explore LINQ to SQL in more detail.

Hope this helps,

Scott

Published Saturday, May 19, 2007 12:41 AM by ScottGu 

Filed under: [ASP.NET](#), [Visual Studio](#), [.NET](#), [LINQ](#), [Data](#)

Comments

Using LINQ to SQL (Part 1) - ScottGu's Blog

Saturday, May 19, 2007 3:50 AM by [Using LINQ to SQL \(Part 1\) - ScottGu's Blog](#)

Pingback from [Using LINQ to SQL \(Part 1\) - ScottGu's Blog](#)

re: Using LINQ to SQL (Part 1)

Saturday, May 19, 2007 4:17 AM by davidacoder

As always, very nice! It would be great if you could continue this series with a discussion of how to handle m:m relationships, given that they are not natively supported by LINQ to SQL. Just some examples how one would work around that limitation in the DAL, if one happens to have a DB with m:m relations.

re: Using LINQ to SQL (Part 1)

Saturday, May 19, 2007 4:32 AM by Kain

If my database have more then 2,000 store procdures ,how can i use DLinq?

re: Using LINQ to SQL (Part 1)

Saturday, May 19, 2007 4:49 AM by elixir

I have a little suggestion here. Is it possible to allow VB statements to span multiple lines without the use of underscores such as

A.foo(bar) A = B

some simple (but smart) regex should be able to separate the lines into

A.foo(bar)

A = B

the underscore character are 2 characters away from your little finger on home row and if in the future I'm going to be implementing a lot of LINQ then that would surely slow down my typing speed to some degree

re: Using LINQ to SQL (Part 1)

Saturday, May 19, 2007 5:54 AM by [Damien Guard](#)

I posted a number of observations about LINQ to SQL on my blog at www.damieng.com/.../linq-to-sql-details-issues-and-patterns.aspx

I would love to know more about in which context the DataContext is used/shared as it doesn't seem thread safe or that it should be around too long because of the caching/stale data problems.

]amien

re: Using LINQ to SQL (Part 1)

Saturday, May 19, 2007 7:24 AM by [Vikram](#)

Wow, I was really wiating for a post on LINQ to SQL from you and today is my day.

Thanks

Vikram

www.vikramlakhotia.com

re: Using LINQ to SQL (Part 1)

Saturday, May 19, 2007 8:07 AM by Steve

Great write up Scott!

How does Linq/Sql handle many-to-many with composite-keys?

Also, in the above situation, if you have a 'join' table:

ie.

Customers

CustomerProducts

Products

On a delete and add of products to customers, does it handle the CustomerProducts association table?

Thanks again

re: Using LINQ to SQL (Part 1)

Saturday, May 19, 2007 9:10 AM by [Daniel](#)

Scott,

The thing I'm still not quite getting after these tutorials, and even after playing with it some in the beta is the best way to use this along with ASP.NET Data Controls. Unless I'm missing something, the generated Update(item) method requires the same DataContext instance that created the item, meaning it doesn't work across postbacks when used in an ObjectDataSource.

I know you've hinted at a LinqDataSource- is there anywhere we can see that yet?

re: Using LINQ to SQL (Part 1)

Saturday, May 19, 2007 10:46 AM by [Roger Jennings](#)

Pingback from oakleafblog.blogspot.com/.../yet-another-primer-on-new-language.html (see the 5/19/2007 update)

Thanks for adding the VB sample code!

--rj

re: Using LINQ to SQL (Part 1)

Saturday, May 19, 2007 12:41 PM by [ScottGu](#)

Hi Davidacoder/Steve,

I'll put m:m relationships on the list to blog about in one of my future Linq to SQL posts (it deserves a post in and of itself).

LINQ to SQL doesn't natively support m:m - instead you typically create an intermediate table to handle the m:m relations.

LINQ to Entities, which will ship shortly after "Orcas", does support m:m relationships directly. So that is another alternative to consider.

Hope this helps,

Scott

re: Using LINQ to SQL (Part 1)

Saturday, May 19, 2007 12:47 PM by [ScottGu](#)

Hi Daniel,

I'll post more about integrating LINQ to SQL with ASP.NET data controls shortly.

Beta2 will have the <asp:linqdatasource> control built-in, which will provide the easiest way to use LINQ with ASP.NET controls (basically just point the ASP.NET controls at the LINQDataSource, and then point the LINQDataSource at the LINQ to SQL entities with a filter and you are done - selection, paging, editing, deleting, insertion all handled for you).

Alternatively, if you don't want to use the LINQDataSource control then you can use the Attach() method on Tables to re-attach a disconnected entity to a DataContext. This enables you to perform changes and updates across post-backs, web-services, and/or any scenario where you don't have the same DataContext. It works well with the <asp:objectdatasource> control today.

Hope this helps,

Scott

re: Using LINQ to SQL (Part 1)

Saturday, May 19, 2007 12:48 PM by [ScottGu](#)

Hi Kain,

You can have any number of stored procedures that you want on your DataContext - so you should be able to use all 2000 of them in your database.

Hope this helps,

Scott

re: Using LINQ to SQL (Part 1)

Saturday, May 19, 2007 3:28 PM by Steve

"LINQ to SQL doesn't natively support m:m - instead you typically create an intermediate table to handle the m:m relations.

LINQ to Entities, which will ship shortly after "Orcas", does support m:m relationships directly. So that is another alternative to consider."

Scott, is this going to be a part of the RTM for Linq to Sql ?

A ORM should at minimal support 1:1, 1:M, M:1, M:M in my opinion.

I'd be disappointed to find out that I would need another tool to handle M:M

Could you have an option to handle the DataContext via a 'Open Session in View' model (ie. www.hibernate.org/43.html or here www.codeproject.com/.../NHibernateBestPractices.asp) rather than call attach or need to relate entities (not EDM, but a Poco object) directly to controls?

robinzhong's blog - links for 2007-05-19

Saturday, May 19, 2007 4:24 PM by [robinzhong's blog - links for 2007-05-19](#)

Pingback from robinzhong's blog - links for 2007-05-19

re: Using LINQ to SQL (Part 1)

Saturday, May 19, 2007 4:58 PM by Rachit

<asp:linqdatasource> would be nice...easy!

re: Using LINQ to SQL (Part 1)

Saturday, May 19, 2007 6:30 PM by [Kyle West](#)

Scott,

Will anything ship with Orcas to generate LINQ to SQL from and existing SQL2005 database?

Any performance comparisons between LINQ and .xsd DataSets?

System.Data.Linq.dll

Saturday, May 19, 2007 6:48 PM by [Daniel Moth](#)

System.Data.Linq.dll

re: Using LINQ to SQL (Part 1)

Saturday, May 19, 2007 7:41 PM by Burton

Hi Scott,

Thanks for the excellent write-up, as usual. Does Linq to SQL replace SQL metal (which was part of the June CTP)?

Thanks,

Burton

robin's tech life & Blog Archive & links for 2007-05-20 & Enjoying Open Source!

Saturday, May 19, 2007 8:23 PM by [robin's tech life » Blog Archive » links for 2007-05-20 » Enjoying Open Source!](#)

Pingback from robin's tech life & Blog Archive & links for 2007-05-20 & Enjoying Open Source!

re: Using LINQ to SQL (Part 1)

Saturday, May 19, 2007 9:17 PM by [ScottGu](#)

Hi Kyle,

The LINQ to SQL designer makes it really easy to model an existing SQL 2005 database. I'll cover this in my next blog post in the series. Basically you can add all of the tables in the database onto the designer and it will automatically infer/create the appropriate associations between the entities.

In terms of performance, LINQ to SQL is really, really fast. In general I'd expect it to be faster than using a DataSet approach.

Hope this helps,

Scott

re: Using LINQ to SQL (Part 1)

Saturday, May 19, 2007 9:19 PM by ScottGu

Hi Burton,

SQLMetal was a command-line tool that creates LINQ to SQL entity models (at the time LINQ to SQL was called "DLINQ").

In addition to the command-line option, LINQ to SQL now supports the WYSIWYG designer surface I showed in my screen-shot above. I find this more convenient to model data entities, which was why I used that approach.

Hope this helps,

Scott

re: Using LINQ to SQL (Part 1)

Saturday, May 19, 2007 11:01 PM by SoftMind

Hi Scott,

I am just confused between LINQ tools and Dynamic Data Controls for ASP.NET as explained in AspNet Futures.

Are they talking about the LINQ tools with a new name comming up with Orcas or its totally different and have no connection with Orcas Tools.

A few line explanations will clear my doubts.

Thanks

SoftMind

re: Using LINQ to SQL (Part 1)

Sunday, May 20, 2007 6:57 AM by Koistya `Navin

Is it possible to do something like this?

int count;

```
var products = (from p in db.Products
                select p).Skeep(20).Take(10).
                GetTotalRowCount(out count);
```

re: Using LINQ to SQL (Part 1)

Sunday, May 20, 2007 7:42 AM by Matt

What type of SQL do the Skip() and Take() operators generate? Would it be efficient enough for paging large amounts of data or would you still want to write your own stored procedure?

Link Listing - May 19, 2007

Sunday, May 20, 2007 8:51 AM by Christopher Steen

Using LINQ to SQL (Part 1) [Via: ScottGu] Easier Winform UI Thread Safe Methods with DynamicProxy2...

re: Using LINQ to SQL (Part 1)

Sunday, May 20, 2007 8:57 AM by Manuel

Hi Scott,

Using the LINQ to SQL Designer, can I assign stored procedures for the CRUD operations of my entities, (like in named datasets) or do I have to rely on the generated SQL code?

re: Using LINQ to SQL (Part 1)

Sunday, May 20, 2007 12:50 PM by ScottGu

Hi Steve,

Unfortunately LINQ to SQL won't support M:M except via an intermediate table in the "Orcas" V1 timeframe.

In terms of the "Open Session in View" pattern, I'd probably recommend against doing this. If I understand the second link correctly, this stores things web requests - which ultimately makes scaling out across multiple web servers harder, and can lead to scaling challenges as more users hit the application.

While you could use this approach with the LINQ to SQL DataContext, a better approach would be to release the context at the end of each request, and use the Attach() feature when a user later posts back and you want to rehydrate the entity from the view. This doesn't require anything to be stored on the server, and is really easy to-do (1 line of code). This will work regardless of whether you are in single server or web farm mode, and will scale incredibly well.

Hope this helps,

Scott

re: Using LINQ to SQL (Part 1)

Sunday, May 20, 2007 12:52 PM by ScottGu

Hi SoftMind,

The new Dynamic Data Controls in the ASP.NET Futures release are a set of UI control helpers that make it much easier to quickly get data-driven UI up and running.

The current release of the data controls work directly against the database - but the next release will allow you to work against LINQ to SQL entities. This will make it really easy to define your data entities, and then quickly generate UI based on them.

Hope this helps,

Scott

re: Using LINQ to SQL (Part 1)

Sunday, May 20, 2007 12:55 PM by ScottGu

Hi Koistya `Navin,

You can write this code to calculate the total number of rows in the query:

```
var query = from p in db.Products
            select p;
```

```
int totalCount = query.Count();  
  
var subProducts = query.Skip(20).Take(10);
```

This will execute two database requests - the first will return the total number of rows in the query. The second returns the subset of rows you want.

At now point does the entire set of products get fetched to the web-server.

Hope this helps,

Scott

re: Using LINQ to SQL (Part 1)

Sunday, May 20, 2007 1:01 PM by [ScottGu](#)

Hi Matt,

LINQ to SQL uses the new ROW_NUMBER() function with SQL 2005 to implement efficient paging support within the database.

I posted two blog posts last year that talk a little more about this capability:

weblogs.asp.net/.../434314.aspx

and:

weblogs.asp.net/.../434787.aspx

The benefit of using LINQ to SQL is that you don't need to write a SPROC to achieve this, and it is much easier to write.

Hope this helps,

Scott

re: Using LINQ to SQL (Part 1)

Sunday, May 20, 2007 1:03 PM by [ScottGu](#)

Hi Manuel,

>>>> Using the LINQ to SQL Designer, can I assign stored procedures for the CRUD operations of my entities, (like in named datasets) or do I have to rely on the generated SQL code?

Yes - you can assign stored procedures for the update, insert and delete operations of your entities. So if you don't want to rely on the SQL code that LINQ to SQL infers for you you can use these to override it.

Hope this helps,

Scott

re: Using LINQ to SQL (Part 1)

Sunday, May 20, 2007 3:20 PM by [Juan María](#)

Hi folks,

you can read this great post here in Spanish:

thinkingindotnet.wordpress.com/.../usando-linq-to-sql-1%c2%aa-parte

P.D.: Sorry, I read it late.

re: Using LINQ to SQL (Part 1)

Sunday, May 20, 2007 3:52 PM by [Krip](#)

Scott,

Great article. A really useful primer on LINQ to SQL. A question for you: Do you have an error in the text? Please check these sentences early in the article:

"For example, the Category class above has a one-to-many relationship with the Product class. This means it will have a "Categories" property which is a collection of Product objects within that category."

Should that be a "Products" property instead of a "Categories" one?

-Krip

re: Using LINQ to SQL (Part 1)

Monday, May 21, 2007 9:20 AM by [Josh Stodola](#)

>> LINQ to SQL will know to automatically persist the appropriate PK/FK relationships for me

AMAZING!!

links for 2007-05-21 » mhinze.com

Monday, May 21, 2007 11:32 AM by [links for 2007-05-21 » mhinze.com](#)

Pingback from [links for 2007-05-21 » mhinze.com](#)

re: Using LINQ to SQL (Part 1)

Monday, May 21, 2007 12:07 PM by Mesan

When will Linq to SQL support other databases (specifically DB2)? Last I read there's only support for MS SQL - doesn't that strike you as rather limiting? Hopefully I'm way off base here, I'm sure you wouldn't plan on shipping a product as cool as this with support only for SQL Server.

re: Using LINQ to SQL (Part 1)

Monday, May 21, 2007 1:12 PM by El Guapo

Scott, you said :

"you can use the Attach() method on Tables to re-attach a disconnected entity to a DataContext. "

How does Linq-to-SQL know if the re-attached object has been modified or which fields have been modified?

Do you recommend exposing these generated classes directly in a data contract for a service? I prefer not to expose database layer implementation to the clients. So how can these generated classes be mapped to business objects for the client callers - is it possible to map to and from external classes and still successful re-attach and use the objects across service calls?

Thanks

[# re: Using LINQ to SQL \(Part 1\)](#)

Monday, May 21, 2007 3:43 PM by Peter

Could you talk a little about the underlying classes that are generated? Are the generated classes partial classes that we could "extend"? Basically, can we add new code to the Products class? Something like a IsNameOk() function inside the Products class that would not map to a field in the database (obviously since it's a function not a property) that would return true or false based on other properties (building business rules is what I'm trying to get to)

Thanks.

[# Link Dump for Monday, May 21, 2007](#)

Monday, May 21, 2007 4:28 PM by [michael eaton](#)

Link Dump for Monday, May 21, 2007

[# re: Using LINQ to SQL \(Part 1\)](#)

Monday, May 21, 2007 5:36 PM by Mike

Typo:

This means it will have a "Categories" property which is a collection of Product objects within that category.

I think "Categories" should be "Products".

[# re: Using LINQ to SQL \(Part 1\)](#)

Monday, May 21, 2007 5:46 PM by Mike (again)

I have some q's too!

1. Can you do many to many relationships without a class for the (in RDB necessary) many-to-many table?
2. Can you also call Save on a single object, and maybe even control the cascaded saving of related objects?
3. In the future articles, can you please also explain scenario's where the database tables and the classes are not so conveniently similar? Some examples: many-to-many relationships and inheritance.

Thanks!

PS. This gives .NET the definitive edge over the rest of the field. It's nice to see MS compete based on some pretty innovative ideas.

[# re: Using LINQ to SQL \(Part 1\)](#)

Monday, May 21, 2007 9:15 PM by Matt

Will there be support for any other db besides SQL Server in the RTM? (spec. Oracle)

[# re: Using LINQ to SQL \(Part 1\)](#)

Monday, May 21, 2007 11:51 PM by Will

The problem with this model is that it allows new developers coming into the field to learn bad practices rather easily. Allowing direct coupling from the presentation tier to the DB. In turn creating my "disposable" apps.

[# re: Using LINQ to SQL \(Part 1\)](#)

Tuesday, May 22, 2007 1:12 AM by [ScottGu](#)

Hi El Guapo,

When doing an Attach for disconnected scenarios, you can either use a timestamp column with the database to determine if there have been changes, or do a comparison of the values to see if there are any deltas.

Hope this helps,

Scott

[# re: Using LINQ to SQL \(Part 1\)](#)

Tuesday, May 22, 2007 1:13 AM by [ScottGu](#)

Hi Peter,

All of the classes generated by the LINQ to SQL designer are generated as partial classes - which means you can definitely add custom validation logic and additional methods/properties to them. This should make adding business rules much, much easier.

Hope this helps,

Scott

[# re: Using LINQ to SQL \(Part 1\)](#)

Tuesday, May 22, 2007 1:15 AM by [ScottGu](#)

Hi Mike,

- 1) For many to many relationships you need to go through an intermediate class (I'll cover this in a future blog post).
- 2) When you Save on the DataContext, it will persist all changes you make (and update everything within a single transaction by default).
- 3) I'll cover some of the more advanced modeling/shaping scenarios in a future post. Stay tuned! :-)

Thanks,

Scott

[# re: Using LINQ to SQL \(Part 1\)](#)

Tuesday, May 22, 2007 1:16 AM by [ScottGu](#)

Hi Will,

There is no need to couple your presentation tier to the database with LINQ. LINQ to SQL generated entity classes that abstract your database and provide a clean way to add validation logic. You can also optionally add an intermediate business layer class between your UI and entity layer to add additional separation if you'd like.

Thanks,
Scott

[# re: Using LINQ to SQL \(Part 1\)](#)

Tuesday, May 22, 2007 10:44 AM by [rob mathieson](#)

Hi Scott

Will there be a zoom feature on the Linq to Sql Deisgner for large databases? This would be brilliant.

Thanks

Rob Mathieson

[# re: Using LINQ to SQL \(Part 1\)](#)

Tuesday, May 22, 2007 10:46 AM by Orlando Agostinho

Hi, Scott

One question, is it possible to use Extension Methods for operators, like: ==,+,-?

Thanks!

Orlando Agostinho

[# re: Using LINQ to SQL \(Part 1\)](#)

Tuesday, May 22, 2007 4:59 PM by Pete

Scott, please check this discussion on the namespace naming for LINQ. Some of the biggest advocates of LINQ really can't understand Microsoft's decision here. We could really do with some feedback,

Thanks, Pete.

forums.microsoft.com/.../ShowPost.aspx

[# re: Using LINQ to SQL \(Part 1\)](#)

Tuesday, May 22, 2007 8:46 PM by Peter

> All of the classes generated by the LINQ to SQL designer are generated

> as partial classes - which means you can definitely add custom validation

> logic and additional methods/properties to them.

OK, enough teasing... can we have this thing by tomorrow? :-)

[# re: Using LINQ to SQL \(Part 1\)](#)

Wednesday, May 23, 2007 4:22 AM by [Mike](#)

If people want a bit more on LINQ to SQL, I made a few videos that you can find links to here;

mtaulty.com/.../9322.aspx

Or, alternatively, you will also find them up here where they might stream/download a bit better :-)

www.microsoft.com/.../nuggets.aspx

Might be of use to some folks.

Thanks,

Mike.

[# re: Using LINQ to SQL \(Part 1\)](#)

Wednesday, May 23, 2007 8:23 AM by PeterM

Great article,

Is there any chance of you showing a simple best practice ASP.NET example of a presentation tier, business logic tier and data acess logic tier solution using LINQ and the asp:linqdatasource. I'd be interested to hear more about scalability, how Attach works and where the DataContext objects would be etc...

Can't wait for the next installment in this series.

Peter

[# re: Using LINQ to SQL \(Part 1\)](#)

Wednesday, May 23, 2007 10:57 AM by [ScottGu](#)

Hi Peter,

Yep - that is definitely on my list todo. :-)

Thanks,

Scott

[# re: Using LINQ to SQL \(Part 1\)](#)

Wednesday, May 23, 2007 12:00 PM by [Thomas H. Lanier](#)

Could you give an example of a computed column? Does it have the same limitations as ADO.Net's DataColumn.Expression property or can it get it's results from a normal DotNet function with full access to all libraries?

[# re: Using LINQ to SQL \(Part 1\)](#)

Wednesday, May 23, 2007 12:33 PM by Charles Guo

Any typo in this:

This means it will have a "Categories" property which is a collection of Product objects within that category.

Shouldn't it be:

This means it will have a "Products" property which is a collection of Product objects within that category.

??

SubSonic Vote: Rewriting the WHERE Method?

Wednesday, May 23, 2007 3:25 PM by [Rob Conery](#)

SubSonic Vote: Rewriting the WHERE Method?

re: Using LINQ to SQL (Part 1)

Wednesday, May 23, 2007 9:06 PM by hawk

hi Dynamic .

will linq support dynamic query builder.

if not :

```
-----  
  
var query :  
  
if(nameTextBox.Text.length>0)  
  
{  
  
    query = from p in db.Products  
              where p.Name=nameTextBox.Text  
              select p;  
  
}  
  
if(ageTextBox.Text.length>0)  
  
{  
  
    query = from p in db.Products  
              where p.Age=ageTextBox.Text  
              select p;  
  
}  
  
if.....  
  
return query ;  
  
}
```

re: Using LINQ to SQL (Part 1)

Thursday, May 24, 2007 5:35 AM by [Orlando Agostinho](#)

Hi, hawk

How about this, I don't really sure, but maybe will work;

```
query = from p in db.Products  
        where  p=> p.Name==" "+nameTextBox.Text  
              || p=>  p.Age==" "+ageTextBox.Text  
              select p;
```

Hi, scott, what do you think about this?

See Ya!

Orlando Agostinho

Lisbon/Portugal

re: Using LINQ to SQL (Part 1)

Thursday, May 24, 2007 11:30 AM by [Rob Mathieson](#)

Hi Scott

Will the Linq to Sql designer support some sort of zoom feature for large databases?

Thanks

Rob

re: Using LINQ to SQL (Part 1)

Thursday, May 24, 2007 12:08 PM by Shane Holder

In the SP example you put the results of the SP into an anonymous type, but then you use a concrete type to iterate over the collection of anonymous types. How much support can the compiler provide to ensure that the shapes of the objects in the anonymous collection match the shape of the iteration variable?

re: Using LINQ to SQL (Part 1)

Friday, May 25, 2007 1:04 AM by [ScottGu](#)

Hi Rob,

Yep - the good news is that the LINQ to SQL designer fully supports a "zoom" feature. So you can put as many tables/entities as you want on it. :-)

Hope this helps,

Scott

re: Using LINQ to SQL (Part 1)

Friday, May 25, 2007 1:05 AM by [ScottGu](#)

Hi Shane,

In the SP example above the SP actually returned an explicit type (specifically a sequence of Product objects). This means that the compiler will provide explicit compile-time checking of the result.

Hope this helps,

Scott

re: Using LINQ to SQL (Part 1)

Friday, May 25, 2007 1:07 AM by [ScottGu](#)

Hi Thomas,

Yep - you can work with computed columns using LINQ to SQL. For some good examples check out my "anonymous types" post here: [weblogs.asp.net/.../new-orcas-language-feature-anonymous-types.aspx](#)

Hope this helps,

Scott

re: Using LINQ to SQL (Part 1)

Friday, May 25, 2007 7:05 AM by Jarle Nygård

It's been said multiple times before, but I'll just reiterate; We need Oracle support i LINQ (LING for Oracle?). It kills me to see all this goodness and know that there is just no way we can ever use this... :(

re: Using LINQ to SQL (Part 1)

Friday, May 25, 2007 11:25 AM by Mike

Great article and I have a request...

- 1) Add ParentID to Categories making categories a tree, and show how we can load from the root categories and walk the tree where root categories have a ParentID of zero.
- 2) Change the Product Category Relation to a many-to-many and show how Linq to SQL can hide the existance of the relationship table [ProductCategoryRelation] so we just do product.Categories and get the actual Category and not a representation of the relation.

Thanks...

re: Using LINQ to SQL (Part 1)

Friday, May 25, 2007 12:12 PM by [Orlando Agostinho](#)

Hi, Scott

I would like to ask how about LINQ Asynchronous? Imagine, I would want running one query but i know that query will be running not so fast, and i want to use any asynchronous mechanism that LINQ can give me!

Thanks a lot!

Orlando Agostinho

Lisbon/Portugal

re: Using LINQ to SQL (Part 1)

Saturday, May 26, 2007 8:27 PM by [ScottGu](#)

Hi Mike,

I'll add a tree sample on my list of posts to blog. The good news is that it works well with LINQ to SQL.

Regarding M:M relationships, LINQ to SQL unfortunately only supports them via an intermediate table/class today. I'll blog how to manage that in a future blog post as well.

Hope this helps,

Scott

re: Using LINQ to SQL (Part 1)

Saturday, May 26, 2007 8:28 PM by [ScottGu](#)

Hi Orlando,

LINQ itself lends itself very well to asynchronous programming. Because queries with LINQ are executed in a deferred way, you can use a nice programming model to manage this. I'll put it on my list of topics to discuss.

Thanks,

Scott

re: Using LINQ to SQL (Part 1)

Sunday, May 27, 2007 8:30 AM by [Thomas H. Lanier](#)

Your "anonymous types" post only seems to deal with "calculated columns" that derive from database functions.

Here's an example I found from an old DLinQ document that illustrates what I think is very powerful; however, it does not seem to work in Beta 1. What happened to the ToSequence() method (has it been renamed)?

```
var q =
    from c in db.Customers
    where c.City == "London"
    select new { c.ContactName, c.Phone };

var q2 =
    from c in q.ToSequence()
    select new MyType {
        Name = DoNameProcessing(c.ContactName),
        Phone = DoPhoneProcessing(c.Phone)
    };


```

Here's a quote from the doumentation that explains what I want to do:

"Still elaborate projections (transformations) may require local procedural logic to implement. For you to use your own local methods in a final projection you will need to project twice. The first

projection extracts all the data values you'll need to reference and the second projection performs the transformation. In between these two projections is a call to the ToSequence() operator that shifts processing at that point from a DLinQ query into a locally executed one."

"Note that the ToSequence() operator, unlike ToList() and ToArray(), does not cause execution of the query. It is still deferred. The ToSequence() operator merely changes the static typing of the query, turning a Query<T> into an IEnumerable<T>, tricking the compiler into treating the rest of the query as locally executed."

Thanks

Using LINQ to SQL (Part 1)

Monday, May 28, 2007 4:41 AM by [DotNetKicks.com](#)

You've been kicked (a good thing) - Trackback from DotNetKicks.com

LINQ的数据库支持

Monday, May 28, 2007 10:28 AM by [徐鸿翼](#)

用于SQL的LINQ，LINQ如此的酷，查询，插入，更新，删除，分页！

LINQ to SQL (Part 2 - Defining our Data Model Classes)

Tuesday, May 29, 2007 4:17 AM by [ScottGu's Blog](#)

In Part 1 of my LINQ to SQL blog post series I discussed "What is LINQ to SQL" and provided a basic overview

LINQ to SQL (Part 2 - Defining our Data Model Classes)

Tuesday, May 29, 2007 3:45 PM by [BusinessRx Reading List](#)

In Part 1 of my LINQ to SQL blog post series I discussed "What is LINQ to SQL" and provided a basic overview

LINQ to SQL (Part 2 - Defining our Data Model Classes)

Tuesday, May 29, 2007 4:15 PM by [ASP.NET](#)

In Part 1 of my LINQ to SQL blog post series I discussed "What is LINQ to SQL" and provided a basic overview

re: Using LINQ to SQL (Part 1)

Thursday, May 31, 2007 2:43 AM by [Anthan](#)

It's so cool,I like it

But I care the perormance when it is runing under huge data

Also,I want to know how to fix the complex relation of two or more entities.

Thanks a lot...

re: Using LINQ to SQL (Part 1)

Friday, June 01, 2007 8:00 AM by iaresean

I actually got a shiver down my spine. A good one though! I can't explain how exciting this new release is!!! :-D

Linq - Way too easy!

Tuesday, June 05, 2007 7:32 AM by [TheCoder](#)

Linq - Way too easy!

re: Using LINQ to SQL (Part 1)

Tuesday, June 12, 2007 4:36 PM by Scott Roberts

I would also be very interested in seeing how this would be used in an ASP.NET environment. For example, I don't follow this comment at all:

"When doing an Attach for disconnected scenarios, you can either use a timestamp column with the database to determine if there have been changes, or do a comparison of the values to see if there are any deltas."

Compare *what* values? Are you saying to load another instance of the object (current DB values) then compare to the re-connected object? IMO, this is hinting at a pretty serious design issue. Is it the DataContext that's tracking changes instead of the object itself? If so, all of your change tracking and undo functionality goes bye-bye if the DataContext is "lost".

Kaizenlog » Blog Archive » Java 13/06/2007

Wednesday, June 13, 2007 12:22 AM by [Kaizenlog » Blog Archive » Java 13/06/2007](#)

Pingback from Kaizenlog » Blog Archive » Java 13/06/2007

re: Using LINQ to SQL (Part 1)

Thursday, June 14, 2007 7:56 AM by [Juliano Nunes](#)

How can we return the result of Linq query? Which data type should I use?

I saw an example that was creating a class representing the database table, so the function that queries the data was returning a generic List to this class type. Are there any different and maybe better way to achieve this?

re: Using LINQ to SQL (Part 1)

Thursday, June 14, 2007 9:32 AM by Andy Mackie

I'll second the calls for Oracle support! As an ISV, I have to write apps that run on SQL Server and Oracle (because that's what clients demand). If LINQ to SQL is really LINQ to SQL Server, then it's a technology I can never use.

re: Using LINQ to SQL (Part 1)

Sunday, June 17, 2007 4:22 PM by [ScottGu](#)

Hi Juliano,

In my language feature posts (especially the query syntax one) I cover the return types of LINQ query expressions. In general, you can treat them as IEnumerable<T> sequences - where the type <T> is based on the select clause of the query expression.

Hope this helps,

Scott

re: Using LINQ to SQL (Part 1)

Sunday, June 17, 2007 4:22 PM by [ScottGu](#)

Hi Scott,

I'll cover that topic in an upcoming post later this month hopefully.

Thanks!

Scott

re: Using LINQ to SQL (Part 1)

Thursday, June 21, 2007 5:31 AM by [Mitsu](#)

Hi all,

I've just read that many people were wondering how to implement many-to-many relationships with Linq to Sql. Here is one simple possible solution exposed on my blog (source code attached): blogs.msdn.com/.../how-to-implement-a-many-to-many-relationship-using-linq-to-sql.aspx

Mitsu

What Everyone is Excited About - LINQ « Wilfred Mworia's Blog

Thursday, June 28, 2007 9:35 AM by [What Everyone is Excited About - LINQ « Wilfred Mworia's Blog](#)

Pingback from What Everyone is Excited About - LINQ « Wilfred Mworia's Blog

LINQ to SQL (Part 3 - Querying our Database)

Friday, June 29, 2007 4:12 AM by [ScottGu's Blog](#)

Last month I started a blog post series covering LINQ to SQL. LINQ to SQL is a built-in O/RM (object

re: Using LINQ to SQL (Part 1)

Monday, July 02, 2007 5:04 AM by Sourabh

Hi Soctt,

You have mentioned that when we use Skip().Take(), it uses the ROW_NUMBER() function in SQL 2005 but when i looked at the query generated i do not see this being used. It's using Sub-query to get the correct set of records.I am using Orcas Beta1.

Any ideas why this would be so?

LINQ to SQL tutorial series

Monday, July 02, 2007 10:30 AM by [DotNetKicks.com](#)

You've been kicked (a good thing) - Trackback from DotNetKicks.com

LINQ to SQL

Monday, July 02, 2007 3:05 PM by [Tiernans Comms Closet](#)

ScottGu has a 3 part post on his blog about LINQ to SQL . This is a very cool technology, which I hope

Hecgo.com » M?s sobre LINQ y Visual Studio 2008

Wednesday, July 04, 2007 2:27 AM by [Hecgo.com » M?s sobre LINQ y Visual Studio 2008](#)

Pingback from Hecgo.com » M?s sobre LINQ y Visual Studio 2008

Quick LINQ link list

Wednesday, July 04, 2007 5:40 PM by [Fabrice's weblog](#)

Some quick links about LINQ: Articles about extension methods by the Visual Basic team Third-party LINQ

Quick LINQ link list

Wednesday, July 04, 2007 5:48 PM by [Linq in Action News](#)

Some quick links about LINQ: Articles about extension methods by the Visual Basic team Third-party LINQ

Visual Studio 2008 Beta 1 (Orcas)

Sunday, July 08, 2007 7:03 AM by [Software Musings](#)

I finally got around to installing VS2008 Beta 1 on Vista and ran across a few issues. When running web

re: Using LINQ to SQL (Part 1)

Sunday, July 08, 2007 6:13 PM by greg

First off, great series of articles! A couple questions:

1. Unless I'm mistaken, Linq to SQL implores an Active Record pattern that, unlike most current ORMs (e.g. NHibernate, WilsonOrMapper), precludes one from going with the Data Mapper (www.martinfowler.com/.../dataMapper.html) approach. Is this correct?

Personally, I have found that an Active Record approach is fine 80% of the time EXCEPT when it comes to remoting your business objects or passing them back-and-forth between web services. As such, I've moved more or less away from the less flexible Active Record approach ... so I'm wondering, can Linq to SQL be used in a Data Mapper type approach and if so, how?

2. Can the Linq to SQL designer be instructed to generate a single .cs file per class (table)? From a manageability and multi-developer team perspective, having all the partial classes loaded into a single .cs file sucks!

Thanks - greg

re: Using LINQ to SQL (Part 1)

Monday, July 09, 2007 4:25 AM by [ScottGu](#)

Hi Greg,

1) LINQ to SQL actually doesn't use the Active Record pattern. It supports populating entities using a Data Mapper approach, and also doesn't require the entities to subclass from a specific base class (by default the entities don't inherit from anything).

2) I think the LINQ to SQL designer generates all of its classes into a single file - but you can define your own partial classes in separate files if you want.

Hope this helps!

Scott

re: Using LINQ to SQL (Part 1)

Monday, July 09, 2007 2:05 PM by greg

Thanks for the response Scott! A couple follow ups:

1. Is there example of using Linq to SQL within the Data Mapper pattern? I'm new to it so maybe I'm missing something.

2. Also, how big of a problem is the fact that Linq to SQL does not natively support Many-To-Many relationships? And why doesn't it given that most every ORM I know of does so??? Personally, as one who currently has this out-of-the-box with my choice ORM (WilsonORMapper) ... I find this to be a blaring deficiency! I mean, in the database I'm looking at right now I have so many intermediary tables (e.g. Users-UserRoles-Roles) I find it hard to believe it aint supported. Am I missing something???

3. Are there any other types of relationships not supported in Linq to Sql?

Thanks again for the feedback and excellent articles!

- greg

LINQ to SQL (Part 4 - Updating our Database)

Wednesday, July 11, 2007 1:00 PM by [ScottGu's Blog](#)

Over the last few weeks I've been writing a series of blog posts that cover LINQ to SQL. LINQ to SQL

LINQ to SQL (Part 4 - Updating our Database)

Wednesday, July 11, 2007 1:32 PM by [ASP.NET](#)

Over the last few weeks I've been writing a series of blog posts that cover LINQ to SQL. LINQ to SQL

re: Using LINQ to SQL (Part 1)

Thursday, July 12, 2007 2:12 AM by [ScottGu](#)

Hi Greg,

My latest LINQ to SQL Part 4 post shows the data mapper pattern in use a little more. You can see how you can use the DataContext class provides the logic for the insert/update/delete operations - while the data model classes stay ignorant of the underlying data logic. Ian Cooper has a good post on LINQ to SQL's "persistance ignorance" here that you might find useful: [iancooper.spaces.live.com/.../cns!844BD2811F9ABE9C!397.entry](#)

You can handle M:M relationships using an intermediary table with LINQ to SQL (my example in the latest Part 4 of this series shows updates with this). What you can't do it model M:M relationships without an intermediary table. Here is a good blog post that talks about how you can change the object model to simulate direct relationships without the intermediary table in the object model: [blogs.msdn.com/.../how-to-implement-a-many-to-many-relationship-using-linq-to-sql.aspx](#)

Hope this helps,

Scott

LINQ overview and new features in beta 2 | Chris Does Dev

Thursday, July 12, 2007 6:27 AM by [LINQ overview and new features in beta 2 | Chris Does Dev](#)

Pingback from LINQ overview and new features in beta 2 | Chris Does Dev

Good LINQ to SQL Posts

Thursday, July 12, 2007 10:05 AM by [Denis Gobo](#)

Over the last few weeks Scott Guthrie has been writing a series of blog posts that cover LINQ to SQL.

LINQ to SQLを使用する (パート1)

Sunday, July 22, 2007 2:24 AM by [Chica's Blog](#)

LINQ to SQLを使用する (パート1)

LINQ To SQL Leren

Wednesday, July 25, 2007 2:18 AM by [Rutger's Techblog](#)

Mijn vriend ScottGu heeft mij deze keer weten te interreseren in: "LINQ To SQL". Gigantisch hoe hij een...

Valer BOCAN's Web Log » Blog Archive » Visual Studio 2008 Beta 2 is here!

Thursday, July 26, 2007 5:02 PM by [Valer BOCAN's Web Log » Blog Archive » Visual Studio 2008 Beta 2 is here!](#)

Pingback from Valer BOCAN's Web Log » Blog Archive » Visual Studio 2008 Beta 2 is here!

VWD Beta2, Web Developer Tools, IE VPC

Thursday, July 26, 2007 7:34 PM by [Petel's Blog](#)

So as it turns out, it's been a while since I last posted. Things have been a little nutty around here.

VWD Beta2, Web Developer Tools, IE VPC

Thursday, July 26, 2007 7:39 PM by [Noticias externas](#)

So as it turns out, it's been a while since I last posted. Things have been a little nutty around

[# All you can LINQ » Quick LINQ link list](#)

Tuesday, July 31, 2007 8:52 PM by [All you can LINQ > Quick LINQ link list](#)

Pingback from All you can LINQ » Quick LINQ link list

[# LINQ to SQL Debug Visualizer](#)

Wednesday, August 01, 2007 1:23 AM by [ScottGu's Blog](#)

Probably the biggest programming model improvement being made in .NET 3.5 is the work being done to make

[# LINQ to SQL Debug Visualizer](#)

Wednesday, August 01, 2007 1:46 AM by [ASP.NET](#)

Probably the biggest programming model improvement being made in .NET 3.5 is the work being done to make

[# Getting to know LINQ to SQL » Mark Monster](#)

Thursday, August 02, 2007 7:23 AM by [Getting to know LINQ to SQL » Mark Monster](#)

Pingback from Getting to know LINQ to SQL » Mark Monster

[# LINQ to SQL 介绍 – Part.1](#)

Sunday, August 05, 2007 10:32 AM by [JimmyZhang](#)

在这篇文章中，来自微软开发团队的 ScottGu 向我们初步介绍了什么是 LINQ TO SQL，以及 LINQ TO SQL 的一些基本操作。

[# SQL to Linq to XML](#)

Sunday, August 05, 2007 4:41 PM by [Steve Clements](#)

SQL to Linq to XML

[# LINQ to SQL Debug Visualizer\(转自Scottgu's Blog\)](#)

Wednesday, August 08, 2007 2:29 AM by [江南白衣](#)

在运行时观察Linq to Sql生成的Sql语句的好工具

[# The asp:ListView control \(Part 1 - Building a Product Listing Page with Clean CSS UI\)](#)

Friday, August 10, 2007 4:16 AM by [ScottGu's Blog](#)

One of the new controls in ASP.NET 3.5 that I think will be very popular is the <asp:ListView>

[# Architecture n tiers ou a layer et la couche d'acc](#)

Friday, August 10, 2007 9:07 AM by [Dominic St-Pierre](#)

Architecture n tiers ou a layer et la couche d'acc

[# LINQ to SQL \(Part 6 - Retrieving Data Using Stored Procedures\)](#)

Thursday, August 16, 2007 5:16 AM by [ScottGu's Blog](#)

Over the last few weeks I've been writing a series of blog posts that cover LINQ to SQL. LINQ to SQL

[# LINQ to SQL \(Part 6 - Retrieving Data Using Stored Procedures\)](#)

Thursday, August 16, 2007 5:36 AM by [ASP.NET](#)

Over the last few weeks I've been writing a series of blog posts that cover LINQ to SQL. LINQ to SQL

[# Linq to SQL 资源](#)

Sunday, August 19, 2007 12:59 PM by [木野狐\(Neil Chen\)](#)

ScottGuthrie的LinqtoSQL系列： 1)介绍[weblogs.asp.net/.../using-linq-to-s...](#)

[# Article: LINQ to SQL \(Part 6 - Retrieving Data Using Stored Procedures\)](#)

Monday, August 20, 2007 12:05 PM by [Denis Gobo](#)

LINQ to SQL is a built-in O/RM (object relational mapper) that ships in the .NET Framework 3.5 release,

[# LINQ with SQL Server Compact \(a.k.a. DLINQ with SQL CE\)](#)

Tuesday, August 21, 2007 4:33 AM by [SQL Server Compact - Compact yet capable](#)

Querying data from SSC database gets easier! “ LINQ ” stands for .net L anguage IN tegrated Q uery. LINQ-enabled

[# LINQ to SQL \(Part 7 - Updating our Database using Stored Procedures\)](#)

Thursday, August 23, 2007 4:27 AM by [ScottGu's Blog](#)

Over the last few weeks I've been writing a series of blog posts that cover LINQ to SQL. LINQ to SQL

[# Risorse su Linq to SQL](#)

Monday, August 27, 2007 3:57 AM by [jankyBlog](#)

Risorse su Linq to SQL

LINQ to SQL (Part 8 - Executing Custom SQL Expressions)

Monday, August 27, 2007 4:04 AM by [ScottGu's Blog](#)

Over the last few weeks I've been writing a series of blog posts that cover LINQ to SQL. LINQ to SQL

LINQ to SQL Tutorials von Scott Guthrie

Friday, September 07, 2007 4:56 PM by [Jürgen Gutsch](#)

Wer das Blog von Scott Guthrie (1) kennt, kennt sicher auch seine Tutorials über LINQ to SQL (2). Auf

LINQ to SQL...finally an ORM I like!

Sunday, September 09, 2007 4:35 PM by [Sean Schade](#)

I've never been a fan of ORM tools. I have used several in the past because the client required it,

LINQ to SQL 第九节 在

Wednesday, September 12, 2007 6:08 AM by [小庄](#)

光看别人写的不行，总得自己写点啥；要是实在没啥好的想法，就干脆翻译别人的。

AWDNUG - September Meeting

Wednesday, September 12, 2007 8:47 PM by [andrew tobin @ grr, argh!](#)

Well, as Mabster has already posted , last night I gave a fairly rushed presentation of what is coming

willcodeforcoffee.com » Blog Archive » LINQ to SQL: The Most Powerful .NET Feature Since C# Attributes

Thursday, September 13, 2007 2:47 PM by [willcodeforcoffee.com » Blog Archive » LINQ to SQL: The Most Powerful .NET Feature Since C# Attributes](#)

Pingback from willcodeforcoffee.com » Blog Archive » LINQ to SQL: The Most Powerful .NET Feature Since C# Attributes

10 Things I Learned From the September MSDN Event in Atlanta at Die, AJAX!

Wednesday, September 19, 2007 3:00 AM by [10 Things I Learned From the September MSDN Event in Atlanta at Die, AJAX!](#)

Pingback from 10 Things I Learned From the September MSDN Event in Atlanta at Die, AJAX!

Orcas Beta 1 and other new stuff

Friday, September 21, 2007 12:31 PM by [Jeff Gabriels Pensieve](#)

It seems to me that the development world is experiencing another period of rapid evolution again, much

(翻译) LINQ to SQL(Part 2) 自ScottGu

Monday, September 24, 2007 8:49 AM by [exp](#)

InPart1

ofmyLINQtoSQLblogpostseriesIdiscussed

Twitter Party Badge

Tuesday, September 25, 2007 3:22 PM by [Twitter Party Badge](#)

Pingback from Twitter Party Badge

Community Convergence XXXI

Tuesday, September 25, 2007 8:38 PM by [Charlie Calvert's Community Blog](#)

Welcome to the thirty-first edition of Community Convergence. This issue features links to seven very

MSDN Blog Postings » Community Convergence XXXI

Tuesday, September 25, 2007 11:22 PM by [MSDN Blog Postings » Community Convergence XXXI](#)

Pingback from MSDN Blog Postings » Community Convergence XXXI

Building an RSS feed using LINQ to XML and LINQ to SQL

Wednesday, September 26, 2007 4:19 AM by [Community Blogs](#)

Version : VS 2008 Beta 2 In this post, I am going to show you how to build a RSS feed of the employees

MSDN Blog Postings » Nachtrag zum BASTA!-Vortrag "LINQ Framework"

Thursday, September 27, 2007 8:33 AM by [MSDN Blog Postings » Nachtrag zum BASTA!-Vortrag "LINQ Framework"](#)

Pingback from MSDN Blog Postings » Nachtrag zum BASTA!-Vortrag "LINQ Framework"

LINQ to SQL : Handling disconnected CRUD operations in ASP.Net

Saturday, September 29, 2007 5:42 PM by [Community Blogs](#)

Most LINQ to SQL examples you find on the net tend to be written in a way that assumes a connected environment

(翻译) LINQ to SQL(Part 4 更新数据库) 自ScottGu

Monday, October 08, 2007 6:53 AM by [exp](#)

Overthelastfewweeksl'vebeen
writingaseriesofblogpoststhatcoverLINQtoSQL.

Code Generators: when can you live with them?

Sunday, November 18, 2007 5:04 PM by [Wojtek's Blog](#)

Tom Hollander just posted a note Code Generators: Can't live with them, can't live without them . His

ASP.NET 3.5 New Features

Tuesday, November 20, 2007 7:08 PM by [Only For Begginers](#)

Με την έλευση του .NET Framework 3.5 έχουμε και την καινούργια έκδοση της ASP.NET με αριθμό 3.5. Τι καινούργια

Neues in Visual Studio 2008/ASP.NET 3.5

Wednesday, November 21, 2007 12:03 PM by [nodomain.cc](#)

Nachdem Microsoft gestern das neue Visual Studio 2008 veröffentlicht hat (siehe auch die News auf Golem.de), habe ich mir heute die Zeit genommen und die Neuigkeiten erforscht. Meiner Ansicht nach ist LINQ (Language Integrated Query) eines der highlights

ASP.NET 3.5 New Features!

Thursday, November 22, 2007 11:23 AM by [Only For Begginers](#)

Με την έλευση του .NET Framework 3.5 έχουμε και την καινούργια έκδοση της ASP.NET με αριθμό 3.5. Τι καινούργια

ASP.Net 3.5 ??? What???s New « Servitium technology

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Saturday, December 01, 2007 7:44 AM by [韩现龙](#)

Overthelastfewweeksl'vebeenwritingaseriesofblogpoststhatcoverLINQtoSQL.

New ASP.NET Dynamic Data Support

Friday, December 14, 2007 6:08 AM by [Blogs](#)

The ASP.NET 3.5 Extensions CTP we shipped this past weekend contains a bunch of great new features. One

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More Linq to SQL » Jaspers' Weblog

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ListView och LinqDataSource - nya kontroller i ASP.NET 3.5 (del 1)

Wednesday, January 23, 2008 4:38 AM by [Robert Folkesson](#)

Med Visual Studio 2008 introduceras flera riktigt stora nyheter för webbútvecklare: Split-vy mellan designläge

MS does OR/M (Linq to SQL)

Wednesday, January 23, 2008 7:58 PM by [Corey's .NET Tip of the Day](#)

Microsoft is finally working on an OR/M tool that looks pretty compelling called LINQ to SQL (previously

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Sunday, February 10, 2008 7:56 PM by [jmc.d.nu » Blog Archive » New Project → Choosing Tools](#)

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Lightweight Database Abstraction » The Sustainable Software Workshop

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DLinqy-thingy, Part One

Thursday, February 21, 2008 1:08 PM by [data.hr](#)

At last, I found some spare time to start playing with that Linq2SQL thing. Installed VS2008 RTM. fired

CodeMash 2008 » The Sideways Traffic Light

Tuesday, February 26, 2008 1:07 PM by [CodeMash 2008 « The Sideways Traffic Light](#)

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Detailed Look: Key components in LINQ to SQL and their Key Roles

Tuesday, February 26, 2008 6:10 PM by [Corey Gaudin](#)

As part of this blog, I plan to have an on-going set of articles that takes a detailed look into some

Detailed Look: Key components in LINQ to SQL and their Key Roles

Wednesday, February 27, 2008 3:49 PM by [Corey Gaudin](#)

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Will's Blog - LINQ to SQL, WCF, JSON and Flex. Oh My.

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madhavrao's Blog

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Pointers for starting with LINQ to SQL » Freekshow

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[# LINQ to SQL \(Part 3 - Querying our Database\)](#)

Sunday, March 16, 2008 11:27 AM by [aspnetkkk123](#)

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[# Greg Hochard's Blog » LINQ and ScottGu](#)

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[# LINQ Resources](#)

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Watch Scott's blog:Part 1 - Einführung in LINQPart 2 - Data Entity Klassen erzeugenPart 3 - Querying databasePart 4 - Updating databasePart 5 - Binding LINQ-Datasource controlsPart 6 - Using Stored Procedures in LINQPart 7 - Updating with Stored Procedu

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[# When WYSIWYG isn't an option « Consulting in Austin](#)

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[# Using LINQ to SQL instead of a sub report.](#)

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[# ORM \(Object Relational Mapper\)](#)

Tuesday, May 20, 2008 11:39 PM by [Wely](#)

I regret that at my first almost two years of software development, I still coded (sometimes copy and

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[# Linq To Sql or Entity Framework? : The Orbifold](#)

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[# LINQ to SQL - useful links](#)

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In search of a solution to how LINQ to SQL should be used in an N-tier application architecture with...

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linq where in

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Tuesday, July 01, 2008 6:13 AM by [Excite Internet](#)

Useful Link - Using LINQ to SQL (Part 1)

Introducing LINQ Tutorial

Friday, July 04, 2008 9:35 AM by [Abu Ismail Loves .NET, Jr. Ismail](#)

These reference sites that might help you: Wikipedia: [en.wikipedia.org/.../Language_integrated_query](#)

Ultracet.

Wednesday, July 16, 2008 9:50 PM by [Ultracet.](#)

Extracting acetaninophen from ultracet. Extracting acetaminophen from ultracet. Ultracet.

Utiliser LINQ to SQL (Partie 1) par Scott Guthrie

Monday, July 21, 2008 2:54 AM by [Blog-Microsoft.fr](#)

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Check if a service is installed with ServiceController using LINQ : tryexcept.com

Sunday, July 27, 2008 2:51 PM by [Check if a service is installed with ServiceController using LINQ : tryexcept.com](#)

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A string of links - LINQ & VB.NET « Technical Aspects in IT

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What is LINQ? LINQ Developer Resources

Thursday, July 31, 2008 2:05 AM by [DotNetJaps](#)

LINQ is Language Integrated query. It is a integral part of visual studio 2008 and Microsoft .NET Framework

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LINQ to SQL Tutorial

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[# A quick Tutorial for Linq to SQL](#)

Sunday, November 09, 2008 9:22 AM by [Frederick Chapeau weBlog on IT.](#)

In less than an hour, I've made a COMPLETE web application, from the UI, to the Database including

[# ScottGu’s Using LINQ to SQL \(Part 1\)](#)

Saturday, November 22, 2008 4:20 PM by [ScottGu's Using LINQ to SQL \(Part 1\)](#)

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[# Bir Yazılımcının Güncesi » Blog Archive » Yazılım Aylığı Mı Olsak Ne?](#)

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[# How to Create a TagCloud Using LINQ and ASP.NET - kosta.apostolou.ca](#)

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[# Create a LINQ/WCF/Silverlight application in 10 simple steps.](#)

Thursday, January 08, 2009 10:51 AM by [Common tips and tricks from a SQL Developer Support perspective](#)

Ok, today I will show how to create a super simple application that uses some of the new stuff you find

[# Uploading Binary files or Images using LINQ to SQL &Aneef.Net](#)

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[# LINQ Resources « Vakul Kumar More](#)

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[# \[Linq To SQL\] Apprendre \(et comprendre\) Linq To SQL | How To ...](#)

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[# Building a Data Layer Using LINQ to SQL and Stored Procedures \(Part 1\) « DevExpertise](#)

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[# LINQ Help | keyongtech](#)

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[# What - Q&A WIKI](#)

Saturday, February 07, 2009 2:46 AM by [What - Q&A WIKI](#)

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Ajax search using JQuery, client side templates and ASP.NT MVC

Wednesday, February 18, 2009 6:26 AM by [Dean Nolan Freelance Software Development Blog](#)

I wrote in a previous post about “live search” using ASP.NET and Javascript. This was the term that I had seen around that described search that when you type your query, results are filtered “live” on the page without a postback to the server. ...

5. LINQ to SQL (Part 5 - Binding UI using the ASP:LinqDataSource Control)

Wednesday, February 18, 2009 8:33 PM by [Sample Weblog](#)

LINQ to SQL (Part 5 - Binding UI using the ASP:LinqDataSource Control) Over the last few weeks I've

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Introducing LINQ Tutorial

Wednesday, February 25, 2009 12:29 PM by [Abu's blog](#)

These reference sites that might help you: Wikipedia: [en.wikipedia.org/.../Language_integrated_query](#)

使用LINQ to SQL 第一部分

Tuesday, March 03, 2009 9:59 AM by [bitstudio](#)

使用LINQtoSQL（第一部分）

【原文地址】UsingLINQtoSQL(Part1)

【原文发表日期】Saturday,May19,200712:41AM

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LINQTOSQL - Tuturials

Monday, March 09, 2009 12:15 PM by [Rocky Chung's Blog](#)

LINQTOSQL - Tuturials

ASP.NET Dynamic Data and Displaying Images with a Custom Field Template

Thursday, March 12, 2009 3:30 PM by [Kirk Evans Blog](#)

Awhile back, I posted about creating an image handler to render images stored in a database . Someone

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