

Copyright © 2014 by Software Craftsmanship Guild.

All rights reserved. No part of these materials may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods, without the prior written permission of the Software Craftsmanship Guild. For permission requests, write to the Software Craftsmanship Guild, addressed “Attention: Permissions Coordinator,” at the address below.

Software Craftsmanship Guild

526 S. Main St, Suite 609

Akron, OH 44311

# Expressions

Software Craftsmanship Guild

# Lesson Goals

- Learn how SQL Server can handle expressions to create derived and calculated fields

# Calculated Fields

- SQL Server can perform many calculations on numeric data
- Whether we do it in the query or in a business object is up to the architects!
  - Sometimes we want to put the calculation load on the app server, sometimes we prefer it on the database server

# Basic Math

We can put expressions into our SQL

```
SELECT ProductName, RetailPrice, (RetailPrice * 1.07)|  
FROM CurrentProducts
```

Notice the missing column name

	ProductName	RetailPrice	(No column name)
1	Underwater Tour 1 Day West Coast	61.483	65.786810
2	Underwater Tour 2 Days West Coast	110.6694	118.416258
3	Underwater Tour 3 Days West Coast	184.449	197.360430
4	Underwater Tour 5 Days West Coast	245.932	263.147240
5	Underwater Tour 1 Week West Coast	307.415	328.934050
6	Underwater Tour 2 Weeks West Coast	553.347	592.081290
7	Underwater Tour 1 Day East Coast	80.859	86.519130

# Calculated Fields Should be Aliased

Use the As operator!

```
SELECT ProductName, RetailPrice,  
       (RetailPrice * 1.07) AS PriceWithTax  
FROM CurrentProducts
```

	ProductName	RetailPrice	PriceWithTax
1	Underwater Tour 1 Day West Coast	61.483	65.786810
2	Underwater Tour 2 Days West Coast	110.6694	118.416258
3	Underwater Tour 3 Days West Coast	184.449	197.360430
4	Underwater Tour 5 Days West Coast	245.932	263.147240

# Not Good Enough...

Let's round it off to two decimals

```
SELECT ProductName, RetailPrice,  
       Round((RetailPrice * 1.07), 2) AS PriceWithTax  
FROM CurrentProducts
```

	ProductName	RetailPrice	PriceWithTax
1	Underwater Tour 1 Day West Coast	61.483	65.790000
2	Underwater Tour 2 Days West Coast	110.6694	118.420000
3	Underwater Tour 3 Days West Coast	184.449	197.360000
4	Underwater Tour 5 Days West Coast	245.932	263.150000
5	Underwater Tour 1 Week West Coast	307.415	328.930000
6	Underwater Tour 2 Weeks West Coast	553.347	592.080000

# CONVERT

Convert can take an input, change the type, and even do some built in formatting. This is commonly used with dates:

```
SELECT FirstName + ' ' + LastName AS [Employee Name], HireDate,
       CONVERT (NVARCHAR, HireDate, 1) AS [MM/ DD/ YY],
       CONVERT (NVARCHAR, HireDate, 101) AS [MM/ DD/ YYYY],
       CONVERT (NVARCHAR, HireDate, 103) AS [DD/ MM/ YYYY],
       CONVERT (NVARCHAR, HireDate, 106) AS [European Letter],
       CONVERT (NVARCHAR, HireDate, 107) AS [Business Letter],
       CONVERT (NVARCHAR, HireDate, 110) AS [MM-DD-YYYY]
FROM Employee
ORDER BY HireDate DESC
```

	Employee Name	HireDate	MM/ DD/ YY	MM/ DD/ YYYY	DD/ MM/ YYYY	European Letter	Business Letter	MM-DD-YYYY
1	Eric Bender	2007-05-17 00:00:00.000	05/17/07	05/17/2007	17/05/2007	17 May 2007	May 17, 2007	05-17-2007
2	Terry O'Haire	2004-10-04 00:00:00.000	10/04/04	10/04/2004	04/10/2004	04 Oct 2004	Oct 04, 2004	10-04-2004
3	James Newton	2003-09-30 00:00:00.000	09/30/03	09/30/2003	30/09/2003	30 Sep 2003	Sep 30, 2003	09-30-2003
4	Barry Brown	2002-08-12 00:00:00.000	08/12/02	08/12/2002	12/08/2002	12 Aug 2002	Aug 12, 2002	08-12-2002



# More on Convert (and Cast)

- Highlight the Convert keyword in your query and press F1 to go to the MSDN documentation.
- This works for any keyword. The SQL documentation is very good.

# Sorting Expressions

No problem! Just Order By the alias

```
SELECT ProductName, RetailPrice,  
       Round((RetailPrice * 1.07), 2) AS PriceWithTax  
FROM CurrentProducts  
ORDER BY PriceWithTax DESC
```

	ProductName	RetailPrice	PriceWithTax
1	Lakes Tour 2 Weeks West Coast	1161.099	1242.380000
2	Lakes Tour 2 Weeks East Coast	1147.986	1228.350000
3	Rain Forest Tour 2 Weeks East Coast	1144.773	1224.910000
4	River Rapids Tour 2 Weeks East Coast	1116.108	1194.240000
5	Wine Tasting Tour 2 Weeks West Coast	1101.969	1179.110000
6	Ocean Cruise Tour 2 Weeks West Coast	1101.969	1179.110000
7	Underwater Tour 2 Weeks Scandinavia	1045.062	1118.220000

# Lab Exercises

1. In Northwind, print a list of products, the value of the stock (unit price \* quantity) and sort it by the value from most to least
2. In Northwind, get a list of employees with a column called NameLastFirst which should be formatted as LastName, FirstName. Sort it alpha by last name then first name
3. Take your query from #1 and also create columns to value the stock in Canadian Dollars, Japanese Yen, Euros, and Pesos given today's exchange rates

# Fin

- Next up: Aggregating Data