The Learning House

427 S. 4th Street #300

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Expressions

.NET Cohort

Coding Bootcamp

SOFTWARE 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 calculations are done 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 highest to lowest.
2. In Northwind, get a list of employees with a column called NameLastFirst which is formatted as LastName, FirstName. Sort it alpha by last name, then first name.
3. Take your query from #1 and create columns to value the stock in Canadian dollars, Japanese yen, euros, and pesos given today's exchange rates.

Fin

- Next up: aggregating data