**Advanced SQL – Week 10**

Basic information about User Defined Functions (UDFs) can be found at

<http://msdn.microsoft.com/en-us/library/aa214363(v=sql.80).aspx>

<http://msdn.microsoft.com/en-us/library/aa175085(v=sql.80).aspx>

* Functions are subroutines made up of one or more Transact-SQL statements that can be used to encapsulate code for reuse.
* User-defined functions are created using the CREATE FUNCTION statement, modified using the ALTER FUNCTION statement, and removed using the DROP FUNCTION statement. Each fully qualified user-defined function name (*database\_name***.***owner\_name***.***function\_name*) must be unique.

SQL Server 2008 supports three types of user-defined functions:

* Scalar functions
* Inline table-valued functions
* Multistatement table-valued functions

Examples of each can be found at <http://www.sqlteam.com/article/user-defined-functions>

* You must **DECLARE** variables before you use them, you can define one or more at the same time.

DECLARE @variablename variabletype = value

SET @TotalCost = 10

SET @TotalCost = @UnitCost \* 1.1

DECLARE @Test money

SET @Test = (SELECT MAX(Sal) FROM Emp)

SELECT @Test

PRINT 'The maximum salary is ' +CONVERT(varchar,@Test,1)

go

CREATE FUNCTION Dept\_Employees (@dept int)

RETURNS TABLE

AS

RETURN

(

select \*

From EMP

where deptno = @dept);

GO

SELECT \* From dbo.Dept\_Employees( 20)

CREATE FUNCTION Dept\_Employees\_Summary (@dept int)

RETURNS TABLE

AS

RETURN

(

select deptno, sum(SAL) As Total\_Dollars

From EMP

where deptno = @dept

group by deptno);

GO

SELECT \* From dbo.Dept\_Employees( 20)

* You can create a function like the one below, that takes input, and provides a set calculated output

CREATE FUNCTION CubicVolume

-- Input dimensions in centimeters.

(@CubeLength decimal(4,1), @CubeWidth decimal(4,1),

@CubeHeight decimal(4,1) )

RETURNS decimal(12,3) -- Cubic Centimeters.

AS

BEGIN

RETURN ( @CubeLength \* @CubeWidth \* @CubeHeight )

END

SELECT dbo.CubicVolume(10.2,8.7,5.4)

This function can then be used anywhere an integer expression is allowed, such as in a computed column for a table:

CREATE TABLE Bricks

(

BrickPartNmbr int PRIMARY KEY,

BrickColor nchar(20),

BrickHeight decimal(4,1),

BrickLength decimal(4,1),

BrickWidth decimal(4,1),

BrickVolume AS ( dbo.CubicVolume(BrickHeight,BrickLength, BrickWidth)))

[http://msdn.microsoft.com/en-us/library/ms191165.aspx](https://owa.calumet.purdue.edu/exchweb/bin/redir.asp?URL=http://msdn.microsoft.com/en-us/library/ms191165.aspx)

**Week 10 Homework**

* Create a function that you input the date, team, and player number and get back the 3 scores, total, and average for that week for that player and create a select statement to show the use of it, make sure the select statement identifies the team number, team name, player number, player name, the date, and the 5 numbers returned to you by the function
* Create a function that you input the date, and team and get back the 3 scores and the total for that team for the week and create a select statement to show the use of it, make sure the select statement identifies the team number, team name, the date and the 4 numbers returned to you by the function