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--
--      Demo - Innovation Days (Query Tuning)
--
--      Dtd: 25-Oct-08
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--      www.ExtremeExperts.com
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-- Get the setup steps going.
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-----
use AdventureWorks
GO
-----
-- Demo code starts
-- We will walk through some common scenario's and way
people code against them.
--
USE AdventureWorks
GO
IF EXISTS (SELECT * FROM sys.indexes WHERE object_id =
OBJECT_ID(N'[Sales].[SalesOrderHeader]') AND name =
N'IX_SalesOrderHeader_OrderDate')
    DROP INDEX [IX_SalesOrderHeader_OrderDate] ON
[Sales].[SalesOrderHeader]
GO
CREATE INDEX IX_SalesOrderHeader_OrderDate ON
Sales.SalesOrderHeader(OrderDate)
GO
SET NOCOUNT ON
GO
-----
-----
--
-- Simple Query Plan
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```
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-----  
SELECT    SalesOrderID  
FROM Sales.SalesOrderHeader H  
WHERE     CustomerID = 344  
GO
```

```
SELECT  
    SalesOrderID,  
    ShipDate  
FROM Sales.SalesOrderHeader H  
WHERE     CustomerID = 344  
GO
```

```
-----  
-----  
--  
-- CORRELATED SUBQUERIES  
--  
-----  
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```

```
-- Simple -----  
SELECT  
    SalesOrderID,  
    Quantity = (SELECT SUM(OrderQty)  
                FROM Sales.SalesOrderDetail D  
                WHERE SalesOrderID = H.SalesOrderID  
                )  
FROM Sales.SalesOrderHeader H  
WHERE     CustomerID = 344  
GO
```

```
-- Multi-Column -----  
SELECT  
    SalesOrderID,  
    Quantity = (SELECT SUM(OrderQty)  
                FROM Sales.SalesOrderDetail D  
                WHERE SalesOrderID = H.SalesOrderID  
                ),
```

```

    QuantityOffer = (SELECT SUM(OrderQty)
                      FROM Sales.SalesOrderDetail D
                      WHERE SalesOrderID = H.SalesOrderID
                      AND SpecialOfferID = 1
                      )
FROM Sales.SalesOrderHeader H
WHERE CustomerID = 344
GO

-- Single Pass -----
SELECT
    H.SalesOrderID,
    SUM(OrderQty) AS Quantity,
    SUM(
        CASE D.SpecialOfferID
            WHEN 1 THEN OrderQty
            ELSE 0
        END
    ) AS QuantityOffer
FROM Sales.SalesOrderHeader H
JOIN Sales.SalesOrderDetail D ON D.SalesOrderID =
H.SalesOrderID
WHERE H.CustomerID = 344
GROUP BY
    H.SalesOrderID
GO

-- UDF (show reads) -----
SELECT
    H.SalesOrderID,
    QuantityOffer0 =
    dbo.GetSalesOrderQuantity(H.SalesOrderID, 0),
    QuantityOffer1 =
    dbo.GetSalesOrderQuantity(H.SalesOrderID, 1)
FROM Sales.SalesOrderHeader H
WHERE H.CustomerID = 344
GO

```

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-----  
-- FUNCTIONS IN THE WHERE CLAUSE  
-- Using Functions around an indexed column  
-- Two queries, one with functions, one without  
-----  
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```

```
SELECT    SalesOrderID,  
          OrderDate  
FROM Sales.SalesOrderHeader  
WHERE     YEAR(OrderDate) = 2003  
AND       MONTH(OrderDate) = 7  
GO
```

```
SELECT    SalesOrderID,  
          OrderDate  
FROM Sales.SalesOrderHeader  
WHERE     OrderDate BETWEEN '7/1/2003' AND '7/31/2003'  
GO
```

```
-----  
-----  
-- USING EXISTS  
-----  
-----
```

```
DECLARE @Rows INT
```

```
SELECT @Rows = COUNT(*)  
FROM Sales.SalesOrderHeader  
WHERE     Status = 5
```

```
IF @Rows > 0 PRINT 'Found!'  
GO
```

```
IF EXISTS (SELECT 1 FROM Sales.SalesOrderHeader WHERE  
           Status = 5)  
    PRINT 'Found!'
```

GO

```
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-----  
-- NULLS - Handle dynamic parameters in a stored  
procedure  
-----  
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```

```
-- Straight SELECT  
DECLARE @SalesOrderID INT  
SET @SalesOrderID = 43671
```

```
SELECT *  
FROM Sales.SalesOrderHeader  
WHERE SalesOrderID = @SalesOrderID  
GO
```

```
-- Using COALESCE  
DECLARE @SalesOrderID INT  
SET @SalesOrderID = 43671
```

```
SELECT *  
FROM Sales.SalesOrderHeader  
WHERE SalesOrderID = COALESCE(@SalesOrderID,  
SalesOrderID)  
GO
```

```
-- Using OR @Parm IS NULL  
DECLARE @SalesOrderID INT  
SET @SalesOrderID = 43671
```

```
SELECT *  
FROM Sales.SalesOrderHeader  
WHERE SalesOrderID = @SalesOrderID OR @SalesOrderID  
IS NULL  
GO
```

```
-- Gets complex with multiple parameters  
-- Nulls & conditional parameters
```

```

DECLARE @SalesOrderID INT,
        @SalesOrderDate DATETIME

SELECT @SalesOrderID = 43761,
        @SalesOrderDate = NULL -- '7/3/2006'

DECLARE @SQL NVARCHAR(MAX)

SET @SQL = 'SELECT * FROM Sales.SalesOrderHeader WHERE
1=1 '

IF @SalesOrderID IS NOT NULL
    SET @SQL = @SQL + ' AND SalesOrderID =
@SalesOrderID '

IF @SalesOrderDate IS NOT NULL
    SET @SQL = @SQL + ' AND OrderDate =
@SalesOrderDate '

-- PRINT @SQL

EXEC sp_executesql
    @SQL,
    N'@SalesOrderID int, @SalesOrderDate DATETIME',
    @SalesOrderID, @SalesOrderDate

SELECT
    *
FROM
    Sales.SalesOrderHeader
WHERE ( SalesOrderID = @SalesOrderID OR @SalesOrderID
IS NULL )
AND OrderDate = COALESCE(@SalesOrderDate,
OrderDate)
GO

```


```
-- Clean-up time
IF EXISTS (SELECT * FROM sys.indexes WHERE object_id =
OBJECT_ID(N'[Sales].[SalesOrderHeader]') AND name =
N'IX_SalesOrderHeader_OrderDate')
    DROP INDEX [IX_SalesOrderHeader_OrderDate] ON
[Sales].[SalesOrderHeader]
GO
```