SQL Query Manipulation (DML)

- Example & Explanation -

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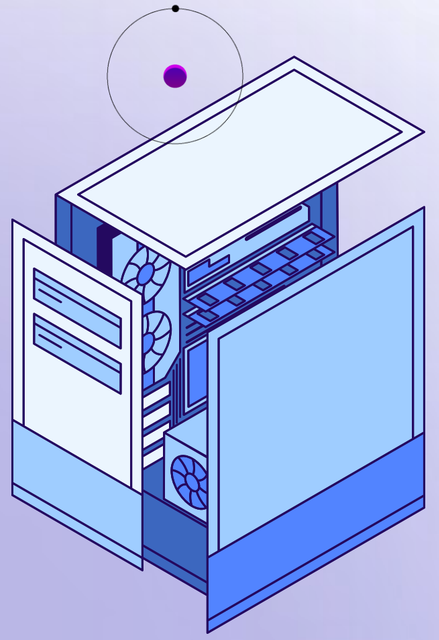
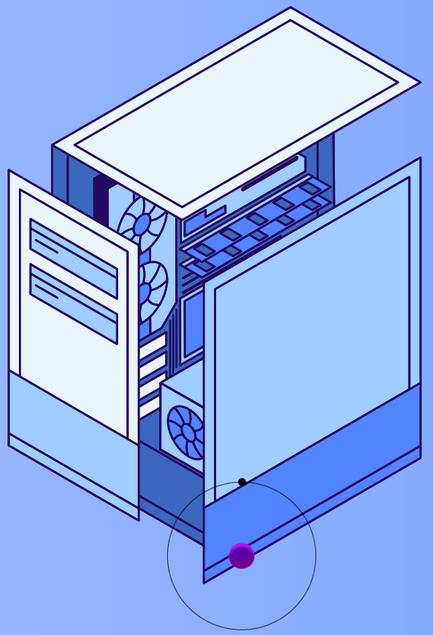
Overview





Background

- The basis is to demonstrate full proficiency in SQL, both DDL and DML.
- Provides examples of creating complex SQL queries for reporting and database programming /stored procedure and have been optimized.

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Scope of Problem

- SQL query manipulation is built using SQL Server (in version 2005).
- What is shown is just an example of some that have been successfully implemented.

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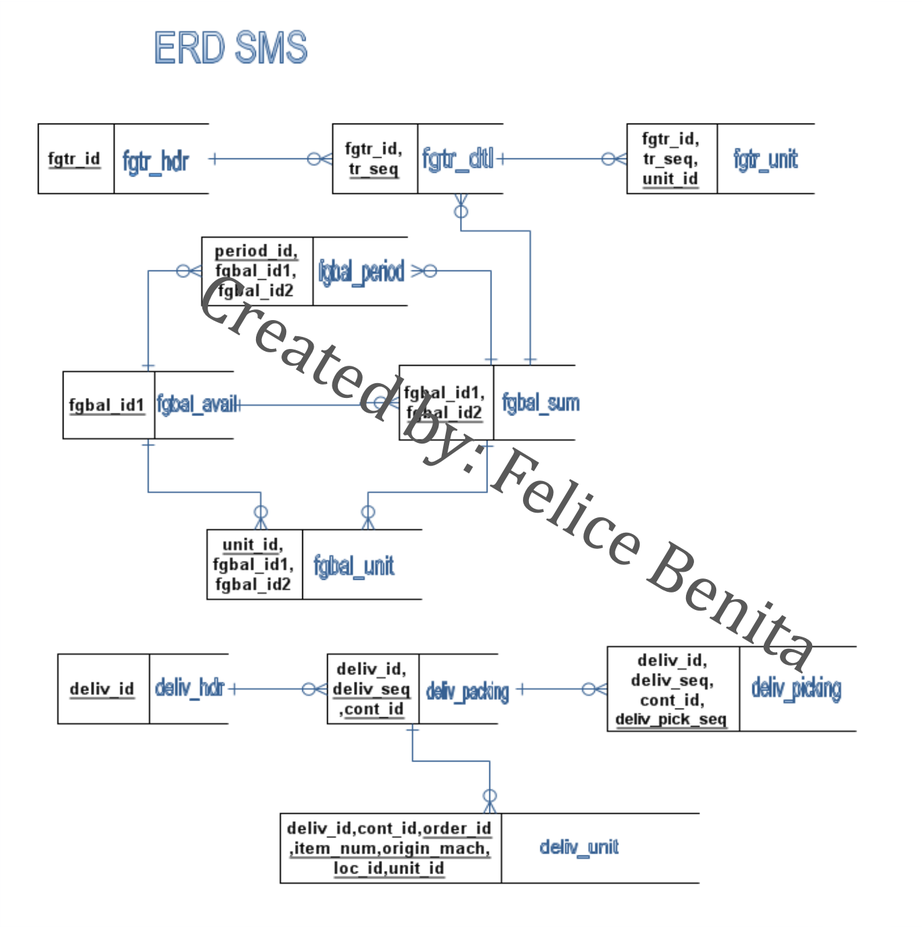
Example of ERD



- ERD is an abbreviation for Entity Relationship Diagram, is a graphical representation of the relationships between entities/tables in database design.
- The image on the side is an example of ERD in database design.

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Example of stored procedure to update or insert detail transactions and update the quantity in balancing table

```
USE [tk_ol1]
GO
/****** Object:  StoredProcedure [dbo].[APPFGTrDtlInsertUpdate]    Script
Date: 12/30/2009 10:58:46 ******/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
-- =============================================
-- Author:        Felice Benita
-- Create date:   ##/##/####
-- Description:   Update or Insert fgtr_dtl and fgbal_sum
-- =============================================
ALTER PROCEDURE [dbo].[APPFGTrDtlInsertUpdate]
      -- Add the parameters for the stored procedure here
      @fgtr_id int,
      @tr_seq smallint,
      @fgbal_id1 int,
      @sap_reason char(5),
      @cost_ctr1 char(10),
      @cost_ctr2 char(10),
      @reff_num1 char(20),
      @reff_num2 char(20),
      @reff_num3 char(20),
      @reff_num4 char(20),
      @loc_id char(5),
      @bin_id char(10),
      @qty1 money,
      @qty2 money,
      @wgt1 money,
      @wgt2 money,
      @user_id char,
      @fgbal_id2 int = 0 OUTPUT,
      @dt_modified datetime = 0 OUTPUT,
      @afcRcds int = 0 OUTPUT
AS
BEGIN
      -- SET NOCOUNT ON added to prevent extra result sets from
      -- interfering with SELECT statements.
      SET NOCOUNT ON;
      DECLARE @afcRcdsBS int, @afcRcdsDtl int
      DECLARE @BalSumRowCnt int, @RowCnt int, @ErrID int, @RetStat smallint
      /* Standard Error & Row Count buffer */
      DECLARE @OldQty1 money, @OldWgt1 money

      SET @RetStat = 0
      SET @afcRcdsBS = 0
      SET @afcRcdsDtl = 0
      SET @dt_modified = GETDATE()
      BEGIN TRAN
            SELECT @fgbal_id2 = fgbal_id2 FROM fgbal_sum WHERE
fgbal_id1=@fgbal_id1 AND loc_id=@loc_id AND bin_id=@bin_id
```



```
            SELECT @BalSumRowCnt=@@ROWCOUNT, @ErrID=@@ERROR
            IF @ErrID <> 0 BEGIN
                  SET @RetStat=@ErrID
            END
            ELSE BEGIN
                  IF @BalSumRowCnt = 0 BEGIN
                        INSERT INTO fgbal_sum
(fgbal_id1,loc_id,bin_id,qty1,wgt1,dt_modified,[user_id])
                                    VALUES ( @fgbal_id1, @loc_id,
@bin_id,@qty1,@wgt1,@dt_modified,@user_id)
                        SELECT @afcRcdsBS=@@ROWCOUNT, @ErrID=@@ERROR
                        IF @ErrID <> 0 BEGIN
                              SET @RetStat=@ErrID
                        END
                        ELSE BEGIN
                              SELECT @fgbal_id2 = @@IDENTITY
                        END
                  END
            END
            IF @RetStat = 0 BEGIN
                  SELECT @OldQty1 = qty1, @OldWgt1 = wgt1 FROM fgtr_dtl WHERE
tr_seq = @tr_seq AND fgtr_id = @fgtr_id
                  SELECT @RowCnt=@@ROWCOUNT, @ErrID=@@ERROR
                  IF @ErrID <> 0 BEGIN
                        SET @RetStat=@ErrID
                  END
                  ELSE BEGIN
                        IF @RowCnt = 1 BEGIN
                              UPDATE fgtr_dtl SET
fgbal_id1=@fgbal_id1,fgbal_id2=@fgbal_id2,

      sap_reason=@sap_reason,cost_ctr1=@cost_ctr1,cost_ctr2=@cost_ctr2,

      reff_num1=@reff_num1,reff_num2=@reff_num2,reff_num3=@reff_num3,

      reff_num4=@reff_num4,qty1=@qty1,qty2=@qty2,wgt1=@wgt1,wgt2=@wgt2,
                                    dt_modified=@dt_modified,
[user_id]=@user_id
                                    WHERE  tr_seq = @tr_seq AND fgtr_id
= @fgtr_id
                              SELECT @afcRcdsDtl=@@ROWCOUNT, @ErrID=@@ERROR
                              IF @ErrID <> 0 BEGIN
                                    SET @RetStat=@ErrID
                              END
                        END
                        ELSE BEGIN
                              SET @OldQty1 = 0
                              SET @OldWgt1 = 0
                              INSERT INTO fgtr_dtl
(fgtr_id,tr_seq,fgbal_id1,fgbal_id2,sap_reason,cost_ctr1,

cost_ctr2,reff_num1,reff_num2,reff_num3,reff_num4,qty1,qty2,
```



```
wgt1,wgt2,sap_doc_seq,dt_modified,[user_id])
                                    VALUES (
@fgtr_id,@tr_seq,@fgbal_id1,@fgbal_id2,@sap_reason,@cost_ctr1,

      @cost_ctr2,@reff_num1,@reff_num2,@reff_num3,@reff_num4,@qty1,@qty2,

@wgt1,@wgt2,0,@dt_modified,@user_id)
                              SELECT @afcRcdsDtl=@@ROWCOUNT, @ErrID=@@ERROR

                              IF @ErrID <> 0 BEGIN
                                    SET @RetStat=@ErrID
                              END
                        END
                  IF @RetStat = 0 AND @BalSumRowCnt > 0 BEGIN
                        UPDATE fgbal_sum SET qty1=qty1-@OldQty1+@qty1,
wgt1=wgt1-@OldWgt1+@wgt1,
                              dt_modified=@dt_modified,
[user_id]=@user_id
                              WHERE fgbal_id1=@fgbal_id1 AND fgbal_id2
                        SELECT @afcRcdsBS=@@ROWCOUNT, @ErrID=@@ERROR
                        IF @ErrID <> 0 BEGIN
                              SET @RetStat=@ErrID
                        END
                  END
            END
      END
      IF(@afcRcdsBS + @afcRcdsDtl = 2) BEGIN
            SET @afcRcds = 1
      END

      IF @RetStat=0 and @afcRcds = 1 BEGIN
            COMMIT TRAN
      END
      ELSE BEGIN
            ROLLBACK TRAN
      END
      SET NOCOUNT OFF
      RETURN @afcRcds
END
```


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Example of query reporting to report container allocation by ship point (1)

```
"Container Allocation By Ship Point"
-- =============================================
-- Author:        Felice Benita
-- Create date:   ##/##/####
-- Description:   Get Container Allocation By Ship Point
-- =============================================

DECLARE @ship_point char(5)
SET @ship_point = '{0}'

SELECT opt.order_id, opt.deliv_id, COALESCE(opt.OrderCont20,0) 'OrderCont20',
COALESCE(opt.OrderCont40,0) 'OrderCont40', COALESCE(opt.OrderCont40H,0)
'OrderCont40H',
        COALESCE(dp2.WgtPPL, 0) 'WgtPPL', opt.loading_date, c.cust_name
'Customer', cr.country_name 'Country', opt.gi_date, opt.ship_point,
da.dt_shipment_completion 'ClosingDate', da.vbi_status, oi.ts_req_ship 'ESD',
om.frgt_terms_id 'IncoTerm',
        COALESCE(opt.CStuffing20, 0) 'CStuffing20',
COALESCE(opt.CStuffing40,0) 'CStuffing40', COALESCE(opt.CStuffing40H,0)
'CStuffing40H',
        COALESCE(opt.CReady20, 0) 'CReady20', COALESCE(opt.CReady40,0)
'CReady40', COALESCE(opt.CReady40H,0) 'CReady40H',
        COALESCE(opt.CNotReady20, 0) 'CNotReady20',
COALESCE(opt.CNotReady40,0) 'CNotReady40', COALESCE(opt.CNotReady40H,0)
'CNotReady40H'
        FROM
        (
        SELECT DISTINCT opt.order_id, opt.deliv_id, opt.loading_date,
opt.gi_date, opt.ship_point, opt.ship_to,
        COUNT(DISTINCT CASE WHEN opt.cont_type = '900010' THEN opt.cont_id
END) AS OrderCont20,
        COUNT(DISTINCT CASE WHEN opt.cont_type = '900011' THEN opt.cont_id
END) AS OrderCont40,
        COUNT(DISTINCT CASE WHEN opt.cont_type = '900012' THEN opt.cont_id
END) AS OrderCont40H,
        COUNT(DISTINCT CASE WHEN opt.dn_date > '1900-01-01' AND opt.cont_type
= '900010' THEN opt.cont_id END) AS CStuffing20,
        COUNT(DISTINCT CASE WHEN opt.dn_date > '1900-01-01' AND opt.cont_type
= '900011' THEN opt.cont_id END) AS CStuffing40,
        COUNT(DISTINCT CASE WHEN opt.dn_date > '1900-01-01' AND opt.cont_type
= '900012' THEN opt.cont_id END) AS CStuffing40H,
        COUNT(DISTINCT CASE WHEN opt.dt_cargo_optimized > '1900-01-01' AND
opt.dn_date = '1900-01-01' AND opt.cont_type = '900010' THEN opt.cont_id END)
AS CReady20,
        COUNT(DISTINCT CASE WHEN opt.dt_cargo_optimized > '1900-01-01' AND
opt.dn_date = '1900-01-01' AND opt.cont_type = '900011' THEN opt.cont_id END)
AS CReady40,
        COUNT(DISTINCT CASE WHEN opt.dt_cargo_optimized > '1900-01-01' AND
opt.dn_date = '1900-01-01' AND opt.cont_type = '900012' THEN opt.cont_id END)
AS CReady40H,
```



```
        COUNT(DISTINCT CASE WHEN opt.dt_cargo_optimized = '1900-01-01' AND
opt.dn_date = '1900-01-01' AND opt.cont_type = '900010' THEN opt.cont_id END)
AS CNotReady20,
        COUNT(DISTINCT CASE WHEN opt.dt_cargo_optimized = '1900-01-01' AND
opt.dn_date = '1900-01-01' AND opt.cont_type = '900011' THEN opt.cont_id END)
AS CNotReady40,
        COUNT(DISTINCT CASE WHEN opt.dt_cargo_optimized = '1900-01-01' AND
opt.dn_date = '1900-01-01' AND opt.cont_type = '900012' THEN opt.cont_id END)
AS CNotReady40H
        FROM
        (
        SELECT dp.order_id, h.deliv_id, h.loading_date, h.gi_date,
h.ship_point, h.ship_to, dp.cont_id, dp.cont_type, dp.dn_date,
da.dt_cargo_optimized FROM
        (SELECT * FROM tk_ol1..deliv_hdr (nolock) WHERE ship_point =
@ship_point AND gi_date = '1900-01-01'
        AND deliv_type IN (SELECT str1 FROM tk_ol1..appl_const (nolock) WHERE
group_id = 'DELI_TYP_CONT_OPTMZ')) as h
        JOIN tk_ol1..deliv_packing dp (nolock) ON h.deliv_id = dp.deliv_id
        LEFT JOIN tk_ol1..deliv_cont_additional da (nolock) ON da.deliv_id =
dp.deliv_id AND da.cont_id = dp.cont_id
        ) AS opt
        GROUP BY opt.order_id, opt.deliv_id, opt.loading_date, opt.gi_date,
opt.ship_point, opt.ship_to
        ) AS opt
        LEFT JOIN
        (
        SELECT deliv_id, SUM(wgt11) 'WgtPPL' FROM tk_ol1..deliv_packing
(nolock) GROUP BY deliv_id
        ) AS dp2
        ON dp2.deliv_id = opt.deliv_id
        LEFT JOIN
        tk_ol1..deliv_additional da (nolock) ON da.deliv_id = opt.deliv_id
        LEFT JOIN
        tk_ol1..customer c (nolock) ON c.customer_id = opt.ship_to
        LEFT JOIN
        tk_ol1..country cr (nolock) ON c.country_id = cr.country_id
        LEFT JOIN
        tk_ol1..order_mast om (nolock) ON om.order_id = opt.order_id
        LEFT JOIN
        tk_ol1..order_item oi (nolock) ON oi.order_id = opt.order_id
        GROUP BY opt.order_id, opt.deliv_id, OrderCont20, OrderCont40,
OrderCont40H, WgtPPL,
        opt.loading_date, c.cust_name, cr.country_name, opt.gi_date,
opt.ship_point, da.dt_shipment_completion, da.vbi_status,
        CStuffing20, CStuffing40, CStuffing40H, CReady20, CReady40,
CReady40H,
        CNotReady20, CNotReady40, CNotReady40H, oi.ts_req_ship,
om.frgt_terms_id
```


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Example of query reporting to report container incoming to mill (2)

```
" Container Incoming To Mill By EMKL "
-- =============================================
-- Author:        Felice Benita
-- Create date:   ##/##/####
-- Description:   Get Container Incoming To Mill By EMKL
-- =============================================

DECLARE @millSiteId VARCHAR(3), @mDateFrom VARCHAR(20), @mDateTo VARCHAR(20),
@mflag varchar(1)
SET @mDateFrom = '{0}'
SET @mDateTo = '{1}' + ' 23:59:59'
SET @mflag = '{2}'
SET @millSiteId = 'PD' + '{3}'

SELECT ke.keterangan 'EMKL', c.FGWH, c.Cont20, c.Cont20CB ,c.Cont40HC,
COALESCE((1*Cont20) + (1*Cont20CB) + (2*Cont40HC),0) 'Teus' FROM
        (
        SELECT c.kdEkspedisi, c.gdtujuan 'FGWH', SUM(DISTINCT CASE
c.type_mobil WHEN 'CONTAINER 20 FEET' THEN COALESCE(JmlCont,0) ELSE 0 END) AS
Cont20,
        SUM(DISTINCT CASE c.type_mobil WHEN 'CONTAINER 20 FEET (COMBO)' THEN
COALESCE(JmlCont,0) ELSE 0 END) AS Cont20CB,
        SUM(DISTINCT CASE c.type_mobil WHEN 'CONTAINER 40 FEET' THEN
COALESCE(JmlCont,0) ELSE 0 END) AS Cont40HC
        FROM
        (
        SELECT c.kdEkspedisi, c.gdtujuan, c.type_mobil, COUNT(c.type_mobil)
'JmlCont' FROM sot..miml c (nolock)
        WHERE c.factory = @millSiteId AND c.tgl1 BETWEEN @mDateFrom AND
@mDateTo AND c.flag = @mflag AND c.type_mobil IN ('CONTAINER 20
FEET','CONTAINER 20 FEET (COMBO)','CONTAINER 40 FEET') AND c.hapus = 0
        GROUP BY c.kdEkspedisi, c.gdtujuan, c.type_mobil
        ) AS c
        GROUP BY c.kdEkspedisi, c.gdtujuan
        ) AS c
        JOIN sot..kodeexpedisi ke (nolock) ON c.kdEkspedisi = ke.kode AND
ke.factory = @millSiteId
        WHERE ke.hapus = 0
        GROUP BY ke.keterangan, c.FGWH, c.kdEkspedisi, c.Cont20, Cont20CB,
c.Cont40HC
        ORDER BY ke.keterangan
```



```
" Container Incoming To Mill By ContainerType "
-- =============================================
-- Author:        Felice Benita
-- Create date:   ##/##/####
-- Description:   Get Container Incoming To Mill By ContainerType
-- =============================================

DECLARE @millSiteId VARCHAR(3), @mDateFrom VARCHAR(20), @mDateTo VARCHAR(20),
@mflag varchar(1)
SET @mDateFrom = '{0}'
SET @mDateTo = '{1}' + ' 23:59:59'
SET @mflag = '{2}'
SET @millSiteId = 'PD' + '{3}'

SELECT ke.keterangan 'EMKL', RTRIM(c.type_mobil) 'Container Type',
COALESCE(c.Cont20,0) 'Cont20', COALESCE(c.Cont20CB,0) 'Cont20CB',
        COALESCE(c.Cont40HC,0) 'Cont40HC', COALESCE((1*Cont20) + (1*Cont20CB)
+ (2*Cont40HC),0) 'Teus'
        FROM
        (
        SELECT c.kdEkspedisi, c.type_mobil, SUM(DISTINCT CASE c.type_mobil
WHEN 'CONTAINER 20 FEET' THEN COALESCE(JmlCont,0) ELSE 0 END) AS Cont20,
        SUM(DISTINCT CASE c.type_mobil WHEN 'CONTAINER 20 FEET (COMBO)' THEN
COALESCE(JmlCont,0) ELSE 0 END) AS Cont20CB,
        SUM(DISTINCT CASE c.type_mobil WHEN 'CONTAINER 40 FEET' THEN
COALESCE(JmlCont,0) ELSE 0 END) AS Cont40HC
        FROM
        (
        SELECT c.kdEkspedisi, c.type_mobil, COUNT(c.type_mobil) 'JmlCont'
FROM sot..miml c (nolock)
        WHERE c.factory = @millSiteId AND c.tgl1 BETWEEN @mDateFrom AND
@mDateTo AND c.flag = @mflag AND c.type_mobil IN ('CONTAINER 20
FEET','CONTAINER 20 FEET (COMBO)','CONTAINER 40 FEET')
        AND c.hapus = 0
        GROUP BY c.kdEkspedisi, c.type_mobil
        ) AS c
        GROUP BY c.kdEkspedisi, c.type_mobil
        ) AS c
        JOIN sot..kodeexpedisi ke (nolock) ON c.kdEkspedisi = ke.kode AND
ke.factory = @millSiteId
        WHERE ke.hapus = 0
        GROUP BY ke.keterangan, c.kdEkspedisi, c.type_mobil, c.Cont20,
Cont20CB, c.Cont40HC
        ORDER BY ke.keterangan
```


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Example of query reporting to report container incoming to mill (3)

```
" Container Incoming To Mill By Shift "
-- =============================================
-- Author:        Felice Benita
-- Create date:   ##/##/####
-- Description:   Get Container Incoming To Mill By Shift
-- =============================================

DECLARE @millSiteId VARCHAR(3), @mDateFrom VARCHAR(20), @mDateTo VARCHAR(20),
@mflag varchar(1)
SET @mDateFrom = '{0}'
SET @mDateTo = '{1}' + ' 23:59:59'
SET @mflag = '{2}'
SET @millSiteId = 'PD' + '{3}'

SELECT ke.keterangan 'EMKL', COALESCE(inco.C20Shift1,0) 'C20Shift1',
COALESCE(inco.C20CBShift1,0) 'C20CBShift1', COALESCE(inco.C40HCShift1,0)
'C40HCShift1', COALESCE((1*C20Shift1) + (1*C20CBShift1) + (2*C40HCShift1),0)
'TeusShift1',
        COALESCE(inco.C20Shift2, 0) 'C20Shift2', COALESCE(inco.C20CBShift2,0)
'C20CBShift2', COALESCE(inco.C40HCShift2,0) 'C40HCShift2',
COALESCE((1*C20Shift2) + (1*C20CBShift2) + (2*C40HCShift2),0) 'TeusShift2',
        COALESCE(inco.C20Shift3, 0) 'C20Shift3', COALESCE(inco.C20CBShift3,0)
'C20CBShift3', COALESCE(inco.C40HCShift3,0) 'C40HCShift3',
COALESCE((1*C20Shift3) + (1*C20CBShift3) + (2*C40HCShift3),0) 'TeusShift3'
FROM
        (
        SELECT kdEkspedisi,
        COUNT(CASE WHEN CONVERT(VARCHAR,tgl1,8) >= '07:00:00' AND
CONVERT(VARCHAR,tgl1,8) < '15:00:00' AND type_mobil = 'CONTAINER 20 FEET'
THEN type_mobil END) AS C20Shift1,
        COUNT(CASE WHEN CONVERT(VARCHAR,tgl1,8) >= '07:00:00' AND
CONVERT(VARCHAR,tgl1,8) < '15:00:00' AND type_mobil = 'CONTAINER 20 FEET
(COMBO)' THEN type_mobil END) AS C20CBShift1,
        COUNT(CASE WHEN CONVERT(VARCHAR,tgl1,8) >= '07:00:00' AND
CONVERT(VARCHAR,tgl1,8) < '15:00:00' AND type_mobil = 'CONTAINER 40 FEET'
THEN type_mobil END) AS C40HCShift1,
        COUNT(CASE WHEN CONVERT(VARCHAR,tgl1,8) >= '15:00:00' AND
CONVERT(VARCHAR,tgl1,8) < '23:00:00' AND type_mobil = 'CONTAINER 20 FEET'
THEN type_mobil END) AS C20Shift2,
        COUNT(CASE WHEN CONVERT(VARCHAR,tgl1,8) >= '15:00:00' AND
CONVERT(VARCHAR,tgl1,8) < '23:00:00' AND type_mobil = 'CONTAINER 20 FEET
(COMBO)' THEN type_mobil END) AS C20CBShift2,
        COUNT(CASE WHEN CONVERT(VARCHAR,tgl1,8) >= '15:00:00' AND
CONVERT(VARCHAR,tgl1,8) < '23:00:00' AND type_mobil = 'CONTAINER 40 FEET'
THEN type_mobil END) AS C40HCShift2,
        COUNT(CASE WHEN ((CONVERT(VARCHAR,tgl1,8) >= '23:00:00' AND
CONVERT(VARCHAR,tgl1,8) <= '23:59:59')
        OR (CONVERT(VARCHAR,tgl1,8) >= '00:00:00' AND CONVERT(VARCHAR,tgl1,8)
< '07:00:00')) AND type_mobil = 'CONTAINER 20 FEET' THEN type_mobil END) AS
C20Shift3,
        COUNT(CASE WHEN ((CONVERT(VARCHAR,tgl1,8) >= '23:00:00' AND
CONVERT(VARCHAR,tgl1,8) <= '23:59:59')
```



```
        OR (CONVERT(VARCHAR,tgl1,8) >= '00:00:00' AND CONVERT(VARCHAR,tgl1,8)
< '07:00:00')) AND type_mobil = 'CONTAINER 20 FEET (COMBO)' THEN type_mobil
END) AS C20CBShift3,
        COUNT(CASE WHEN ((CONVERT(VARCHAR,tgl1,8) >= '23:00:00' AND
CONVERT(VARCHAR,tgl1,8) <= '23:59:59')
        OR (CONVERT(VARCHAR,tgl1,8) >= '00:00:00' AND CONVERT(VARCHAR,tgl1,8)
< '07:00:00')) AND type_mobil = 'CONTAINER 40 FEET' THEN type_mobil END) AS
C40HCShift3
        FROM
        (
        SELECT a.kdEkspedisi, a.type_mobil, a.tgl1 FROM sot..miml a (nolock)
        WHERE a.factory = @millSiteId AND a.tgl1 BETWEEN @mDateFrom AND
@mDateTo AND a.flag = @mflag
        AND a.type_mobil IN ('CONTAINER 20 FEET','CONTAINER 20 FEET
(COMBO)','CONTAINER 40 FEET') AND a.hapus = 0
        ) AS miml
        GROUP BY miml.kdEkspedisi
        ) AS inco
        JOIN sot..kodeexpedisi ke (nolock) ON inco.kdEkspedisi = ke.kode AND
ke.factory = @millSiteId AND ke.hapus = 0
        ORDER BY ke.keterangan
```


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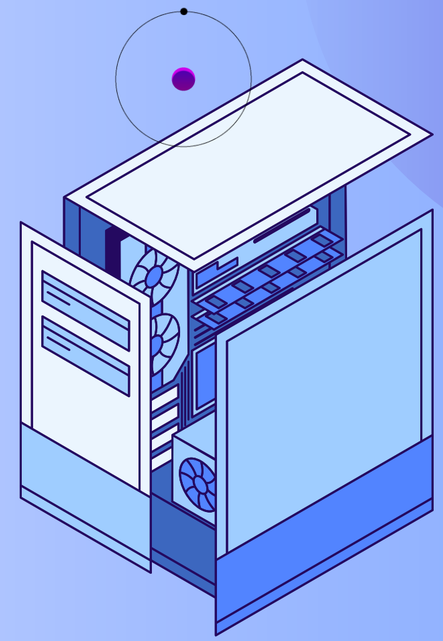
Conclusion

- SQL query manipulation has been successfully implemented.
- From the test results, it can be seen that the query that was built worked correctly and as desired.



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THANK YOU!

Those are some examples of complex SQL query manipulation (DML) using SQL Server that I created and have tested well.

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