SQL Assignments

SQL related assignments will be on Wide World Importers Database if not otherwise introduced.

1. List of Persons' full name, all their fax and phone numbers, as well as the phone number and fax of the company they are working for (if any).

```
SELECT p.FullName, a.FaxNumber, a.PhoneNumber, a.CompanyPhoneNumber,
a.CompanyFaxNumber
FROM
(SELECT p.FullName, p.FaxNumber, p.PhoneNumber, s.PhoneNumber as CompanyPhoneNumber,
s.FaxNumber  as CompanyFaxNumber
FROM Application.People p
JOIN Purchasing.Suppliers s
ON s.PrimaryContactPersonID = p.PersonID
UNION
SELECT p.FullName, p.FaxNumber, p.PhoneNumber, c.PhoneNumber as CompanyPhoneNumber,
c.FaxNumber  as CompanyFaxNumber
FROM Sales.Customers c
JOIN Application.People p
ON c.PrimaryContactPersonID = p.PersonID) a
RIGHT JOIN Application.People p
ON a.FullName = p.FullName
```

2. If the customer's primary contact person has the same phone number as the customer's phone number, list the customer companies.

```
SELECT CustomerName
FROM Sales.Customers c
JOIN Application.People p
ON c.PrimaryContactPersonID = p.PersonId
WHERE c.PhoneNumber = p.PhoneNumber;
```

3. List of customers to whom we made a sale prior to 2016 but no sale since 2016-01-01.

```
SELECT c.CustomerName
FROM
(SELECT DISTINCT CustomerID
FROM Sales.Orders
WHERE YEAR(OrderDate) < '2016'
INTERSECT
SELECT CustomerID
FROM
(SELECT CustomerID, MAX(OrderDate) AS MaxDate
FROM Sales.Orders
GROUP BY CustomerID
HAVING MAX(OrderDate) <= '2016-01-01') md) t
JOIN Sales.Customers c
ON c.CustomerID = t.CustomerID
```

4. List of Stock Items and total quantity for each stock item in Purchase Orders in Year 2013.

```
SELECT StockItemID, SUM(OrderedOuters) AS TotalQuant
FROM Purchasing.PurchaseOrderLines pol
JOIN
(SELECT PurchaseOrderID, OrderDate
FROM Purchasing.PurchaseOrders
WHERE YEAR(OrderDate) = '2013') po
ON pol.PurchaseOrderID = po.PurchaseOrderID
GROUP BY StockItemID;
```

5. List of stock items that have at least 10 characters in description.

```
SELECT StockItemID, Description
FROM Purchasing.PurchaseOrderLines
WHERE LEN(Description) >= 10
```

6. List of stock items that are not sold to the state of Alabama and Georgia in 2014.

```
SELECT DISTINCT(StockItemID)
FROM Sales.OrderLines
WHERE StockItemID NOT IN (SELECT StockItemID
                          FROM Sales.OrderLines ol
                          JOIN Sales.Orders o
                          ON ol.ORDERID = o.OrderID
                          JOIN Sales.Customers c
                          ON o.CustomerID = c.CustomerID
                          JOIN Application.Cities ci
                          ON c.DeliveryCityID = ci.CityID
                          JOIN Application.StateProvinces sp
                          ON ci.StateProvinceID = sp.StateProvinceID
                          WHERE StateProvinceName IN ('Alabama', 'Georgia')
                          AND YEAR(OrderDate) = '2014');
```

7. List of States and Avg dates for processing (confirmed delivery date – order date).

```
SELECT city.StateProvinceID, AVG(DATEDIFF(DAY, o.OrderDate, CONVERT(DATE,
i.ConfirmedDeliveryTime))) AS AvgProcessDay
FROM Sales.Orders o
JOIN Sales.Invoices i
ON i.OrderID = o.OrderID
JOIN Sales.Customers c
ON c.CustomerID = o.CustomerID
JOIN Application.Cities city
ON city.CityID = c.DeliveryCityID
GROUP BY city.StateProvinceID
```

8. List of States and Avg dates for processing (confirmed delivery date – order date) by month.

```
SELECT city.StateProvinceID, o.Month,
AVG(DATEDIFF(day, o.OrderDate, CONVERT(DATE, i.ConfirmedDeliveryTime))) AS
AvgProcessingDay
FROM (SELECT *, MONTH(OrderDate) as Month FROM Sales.Orders) o
JOIN Sales.Invoices i
ON i.OrderID= o.OrderID
JOIN Sales.Customers c
ON c.CustomerID = o.CustomerID
JOIN Application.Cities city
ON city.CityID = c.DeliveryCityID
GROUP BY city.StateProvinceID, o.Month
ORDER BY city.StateProvinceID, o.Month;
```

9. List of StockItems that the company purchased more than sold in the year of 2015.

```
SELECT a.StockItemID
FROM
(SELECT StockItemID, SUM(OrderedOuters) Purchased
FROM Purchasing.PurchaseOrderLines
GROUP BY StockItemID) a
JOIN
(SELECT StockItemID, SUM(Quantity) Sold
FROM Sales.OrderLines
GROUP BY StockItemID) b
ON a.StockItemID = b.StockItemID
WHERE (Purchased - Sold) > 0
```

10. List of Customers and their phone number, together with the primary contact person's name, to whom we did not sell more than 10 mugs (search by name) in the year 2016.

```
WITH temp AS
(
SELECT c.CustomerName, c.PhoneNumber, c.PrimaryContactPersonID, si.StockItemName,
ol.Quantity
FROM Sales.Customers c
JOIN Sales.Orders o
ON c.CustomerID = o.CustomerID
JOIN Sales.OrderLines ol
ON o.OrderID = ol.OrderID
JOIN Warehouse.StockItems si
ON ol.StockItemID = si.StockItemID
WHERE si.StockItemName LIKE '%mug%'
AND YEAR(o.OrderDate) = '2016'
)

SELECT CustomerName, PhoneNumber, PrimaryContactPersonID
FROM temp
GROUP BY CustomerName, PhoneNumber, PrimaryContactPersonID
HAVING SUM(Quantity) <= 10;
```

11. List all the cities that were updated after 2015-01-01.

```
SELECT CityName
FROM Application.Cities
WHERE ValidFrom > ‘2015-01-01’
```

12. List all the Order Detail (Stock Item name, delivery address, delivery state, city, country, customer name, customer contact person name, customer phone, quantity) for the date of 2014-07-01. Info should be relevant to that date.

```
SELECT si.StockItemName, (c.DeliveryAddressLine1 + c.DeliveryAddressLine2) AS DeliveryAddress,
sp.StateProvinceName, ci.CityName, co.CountryName,
                        c.CustomerName, p.FullName, c.PhoneNumber, ol.Quantity
FROM Sales.OrderLines ol
JOIN Sales.Orders o
ON ol.OrderID = o.OrderID
JOIN Warehouse.StockItems si
ON ol.StockItemID = si.StockItemID
JOIN Sales.Customers c
ON o.CustomerID = c.CustomerID
JOIN Application.People p
ON c.PrimaryContactPersonID = p.PersonID
JOIN Application.Cities ci
```

```
ON c.DeliveryCityID = ci.CityID
JOIN Application.StateProvinces sp
ON ci.StateProvinceID = sp.StateProvinceID
JOIN Application.Countries co
ON sp.CountryID = co.CountryID
WHERE o.OrderDate = '2014-07-01';
```

13. List of stock item groups and total quantity purchased, total quantity sold, and the remaining stock quantity (quantity purchased – quantity sold)

```
SELECT a.StockGroupID, Purchased, Sold, (Purchased - Sold) RemainStock
FROM
(SELECT StockGroupID, SUM(OrderedOuters) Purchased
FROM Purchasing.PurchaseOrderLines pol
JOIN Warehouse.StockItemStockGroups sisg
ON pol.StockItemID  = sisg.StockItemID
GROUP BY StockGroupID) a
JOIN
(SELECT StockGroupID, SUM(Quantity) Sold
FROM Sales.OrderLines ol
JOIN Warehouse.StockItemStockGroups sisg
ON ol.StockItemID  = sisg.StockItemID
GROUP BY StockGroupID) b
ON a.StockGroupID = b.StockGroupID;
```

14. List of Cities in the US and the stock item that the city got the most deliveries in 2016. If the city did not purchase any stock items in 2016, print “No Sales”.

```
WITH CityUS AS
(SELECT c.CityID, CityName
FROM Application.Cities c
JOIN Application.StateProvinces sp
ON sp.StateProvinceID = c.StateProvinceID
JOIN Application.Countries co
ON co.CountryID = sp.CountryID
WHERE CountryName = 'United States'),

DeliRank AS
(SELECT CityID, StockItemID, RANK() OVER(PARTITION BY CityID ORDER BY DeliCnt) AS Ranking
FROM
(SELECT ci.CityID, StockItemID, COUNT(i.ConfirmedDeliveryTime) AS DeliCnt
FROM Application.Cities ci
JOIN Sales.Customers c
ON ci.CityID =  c.DeliveryCityID
JOIN Sales.Invoices i
ON c.CustomerID = i.CustomerID
JOIN Sales.InvoiceLines il
ON il.InvoiceID = i.InvoiceID
WHERE YEAR(ConfirmedDeliveryTime) = '2016'
GROUP BY ci.CityID, il.StockItemID) inv)

SELECT CityID, CONVERT(VARCHAR(100), StockItemID) AS StockID
FROM DeliRank
WHERE Ranking = 1
UNION
SELECT CityID, CONVERT(VARCHAR(100), StockItemID) AS StockID
FROM
(SELECT CityID, 'No Sales' AS StockItemID
FROM CityUS
WHERE CityID NOT IN (SELECT CityID FROM DeliRank)) CityUSNoSales
```

15. List any orders that had more than one delivery attempt (located in invoice table).

```
SELECT OrderID
FROM
(SELECT distinct OrderID, RANK() OVER(ORDER BY DeliverAttempt DESC)  AS Ranking
FROM
(SELECT OrderID , LEN(JSON_VALUE(inv.ReturnedDeliveryData, '$.Events[1].Event')) AS
DeliverAttempt
FROM Sales.Invoices i
WHERE_VALUE(i.ReturnedDeliveryData, '$.Events[1].Event') IS NOT NULL) tempt
) temptt
WHERE Ranking > 1
```

16. List all stock items that are manufactured in China. (Country of Manufacture)

```
SELECT StockItemID, JSON_VALUE(CustomFields, '$.CountryOfManufacture') AS Country
FROM WareHouse.StockItems
WHERE JSON_VALUE(CustomFields, '$.CountryOfManufacture') = 'China'
```

17. Total quantity of stock items sold in 2015, group by country of manufacturing.

```
SELECT Country, SUM(Quantity) AS ItemsSold
FROM Sales.OrderLines ol
JOIN Sales.Orders o
ON ol.OrderID = o.OrderID
AND YEAR(o.OrderDate) = '2015'
JOIN
(SELECT StockItemID, JSON_VALUE(CustomFields, '$.CountryOfManufacture') AS Country
FROM WareHouse.StockItems) co
```

```
ON ol.StockItemID = co.StockItemID
GROUP BY Country
```

18. Create a view that shows the total quantity of stock items of each stock group sold (in orders) by year 2013-2017. [Stock Group Name, 2013, 2014, 2015, 2016, 2017]

```
CREATE VIEW SIQuantByY
AS
SELECT StockGroupName, [2013], [2014], [2015], [2016], [2017]
FROM
(SELECT StockGroupName, YEAR(OrderDate) AS OrderYear, Quantity
FROM Sales.OrderLines ol
JOIN Sales.Orders o
ON o.OrderID = ol.OrderID
JOIN Warehouse.StockItemStockGroups sisg
ON sisg.StockItemID = ol.StockItemID
JOIN Warehouse.StockGroups sg
ON sisg.StockGroupID = sg.StockGroupID
WHERE YEAR(OrderDate) IN (2013, 2014, 2015, 2016, 2017)) st
PIVOT
(SUM(Quantity) FOR OrderYear IN ([2013], [2014], [2015], [2016], [2017])) pt
```

19. Create a view that shows the total quantity of stock items of each stock group sold (in orders) by year 2013-2017. [Year, Stock Group Name1, Stock Group Name2, Stock Group Name3, … , Stock Group Name10]

```
DECLARE @cols AS NVARCHAR(MAX)

SELECT @cols = COALESCE(@cols + ', ', '') + QUOTENAME([StockGroupName])
FROM (SELECT DISTINCT StockGroupName FROM Warehouse.StockGroups) a

DECLARE @query AS NVARCHAR(MAX)
SET @query = 'SELECT OrderYear, ' + @cols + '
FROM
(SELECT YEAR(OrderDate) AS OrderYear, [StockGroupName], Quantity
FROM Sales.OrderLines ol
JOIN Sales.Orders o
ON o.OrderID = ol.OrderID
JOIN Warehouse.StockItemStockGroups sisg
ON sisg.StockItemID = ol.StockItemID
JOIN Warehouse.StockGroups sg
ON sisg.StockGroupID = sg.StockGroupID
WHERE YEAR(OrderDate) IN (2013, 2014, 2015, 2016, 2017)) st
PIVOT
(SUM(Quantity) FOR [StockGroupName] IN (' + @cols + ')) pt'

EXEC(@query)
```

```
DECLARE @view NVARCHAR(MAX)
SET @view = 'CREATE VIEW SIQuantByY2 AS ' + @query

EXEC(@view)
```

20. Create a function, input: order id; return: total of that order. List invoices and use that function to attach the order total to the other fields of invoices.

```
CREATE FUNCTION OrderTotal (@orderId INT)
RETURNS TABLE AS
RETURN SELECT a.*, OrderTotal
        FROM Sales.Invoices a
        JOIN
        (SELECT it.InvoiceID, SUM(ItemTotal) AS OrderTotal
        FROM
        (SELECT i.InvoiceID, (il.Quantity * il.UnitPrice) AS ItemTotal
        FROM Sales.Invoices i
        JOIN Sales.InvoiceLines il
        ON i.InvoiceID = il.InvoiceID
        WHERE i.OrderID = @orderID) it
        GROUP BY it.InvoiceID) b
        ON a.InvoiceID = b.InvoiceID

SELECT * FROM OrderTotal(2)
```

21. Create a new table called ods.Orders. Create a stored procedure, with proper error handling and transactions, that input is a date; when executed, it would find orders of that day, calculate order total, and save the information (order id, order date, order total, customer id) into the new table. If a given date is already existing in the new table, throw an error and roll back. Execute the stored procedure 5 times using different dates.

```
CREATE SCHEMA [ods]
GO

CREATE TABLE [ods].[Orders] (
        [OrderID] [int] NOT NULL PRIMARY KEY,
        [OrderDate] [date] NOT NULL,
        [OrderTotal] [decimal](18,2) NOT NULL,
        [CustomerID] [int] NOT NULL)
GO

CREATE PROCEDURE order_input_by_date
```

```
@searchDate DATE
AS
  BEGIN TRY
     BEGIN TRANSACTION
     INSERT INTO [ods].[Orders]
            SELECT b.OrderID, b.OrderDate, Ordertotal, b.CustomerID
            FROM
            (SELECT od.OrderID, SUM(Quantity*UnitPrice) AS OrderTotal
            FROM
            (SELECT *
            FROM Sales.Orders o
            WHERE OrderDate = @searchDate) od
            JOIN Sales.OrderLines ol
            ON od.OrderID = ol.OrderID
            GROUP BY od.OrderID) a
            JOIN Sales.Orders b
            ON a.OrderID = b.OrderID
  COMMIT TRANSACTION
 END TRY
BEGIN CATCH
            PRINT('ERROR')
           ROLLBACK TRANSACTION
END CATCH

EXEC order_input_by_date '2014-03-19';
EXEC order_input_by_date '2015-02-14';
EXEC order_input_by_date '2016-01-12';
EXEC order_input_by_date '2013-03-29';
EXEC order_input_by_date '2013-07-24';
```

22. Create a new table called ods.StockItem. It has following columns: [StockItemID], [StockItemName] ,[SupplierID] ,[ColorID] ,[UnitPackageID] ,[OuterPackageID] ,[Brand] ,[Size] ,[LeadTimeDays] ,[QuantityPerOuter] ,[IsChillerStock] ,[Barcode] ,[TaxRate] ,[UnitPrice],[RecommendedRetailPrice] ,[TypicalWeightPerUnit] ,[MarketingComments] ,[InternalComments], [CountryOfManufacture], [Range], [Shelflife]. Migrate all the data in the original stock item table.

```
CREATE TABLE [ods].[StockItem] (
            [StockItemID] [int] NOT NULL PRIMARY KEY,
            [StockItemName] [nvarchar](100) NOT NULL,
            [SupplierID] [int] NOT NULL,
            [ColorID] [int] NULL,
            [UnitPackageID] [int] NOT NULL,
            [OuterPackageID] [int] NOT NULL,
            [Brand] [nvarchar](50) NULL,
            [Size] [nvarchar](20) NULL,
            [LeadTimeDays] [int] NOT NULL,
            [QuantityPerOuter] [int] NOT NULL,
            [IsChillerStock] [bit] NOT NULL,
            [Barcode] [nvarchar](50) NULL,
            [TaxRate] [decimal](18, 3) NOT NULL,
            [UnitPrice] [decimal](18, 2) NOT NULL,
            [RecommendedRetailPrice] [decimal](18, 2) NULL,
            [TypicalWeightPerUnit] [decimal](18, 3) NOT NULL,
            [MarketingComments] [nvarchar](max) NULL,
            [InternalComments] [nvarchar](max) NULL,
            [CountryOfManufacture] [nvarchar](100),
            [Range] [nvarchar](100) NULL,
            [Shelflife] [nvarchar](100) NULL,
            )
GO


INSERT INTO ods.StockItem
SELECT StockItemID, StockItemName, SupplierID, ColorID, UnitPackageID, OuterPackageID,
Brand,
Size, LeadTimeDays, QuantityPerOuter, IsChillerStock, Barcode, TaxRate, UnitPrice,
RecommendedRetailPrice,
TypicalWeightPerUnit, MarketingComments, InternalComments, JSON_VALUE(CustomFields,
'$.CountryOfManufacture'),
JSON_VALUE(CustomFields, '$.Range'), NULL
FROM Warehouse.StockItems
```

23. Rewrite your stored procedure in (21). Now with a given date, it should wipe out all the order data prior to the input date and load the order data that was placed in the next 7 days following the input date.

```
CREATE PROCEDURE order_input_by_date1
@searchDate DATE
AS
BEGIN TRY
            BEGIN TRANSACTION
                        DELETE FROM [ods].[Orders]
                        WHERE OrderDate < @searchDate

            INSERT INTO [ods].[Orders]
            SELECT b.OrderID, b.OrderDate, Ordertotal, b.CustomerID
            FROM
            (SELECT od.OrderID, SUM(Quantity*UnitPrice) AS OrderTotal
            FROM
            (SELECT *
            FROM Sales.Orders o
            WHERE OrderDate IN (@searchDate, DATEADD(DAY, 1, @searchDate), DATEADD(DAY,
2, @searchDate), DATEADD(DAY, 3, @searchDate),
                                                    DATEADD(DAY, 4, @searchDate),
DATEADD(DAY, 5, @searchDate), DATEADD(DAY, 6, @searchDate), DATEADD(DAY, 7,
@searchDate))) od
        JOIN Sales.OrderLines ol
        ON od.OrderID = ol.OrderID
        GROUP BY od.OrderID) a
        JOIN Sales.Orders b
        ON a.OrderID = b.OrderID
        COMMIT TRANSACTION
END TRY
BEGIN CATCH
  PRINT('ERROR')
        ROLLBACK TRANSACTION
END CATCH

EXEC order_input_by_date1 '2015-02-15';
```

24. Consider the JSON file:

```
DECLARE @jsonda nvarchar(max);
set @jsonda =  '{
  "PurchaseOrders":[
    {
      "StockItemName":"Panzer Video Game",
      "Supplier":"7",
      "UnitPackageId":"1",
      "OuterPackageId":[
        6,
        7
      ],
      "Brand":"EA Sports",
      "LeadTimeDays":"5",
      "QuantityPerOuter":"1",
      "TaxRate":"6",
      "UnitPrice":"59.99",
      "RecommendedRetailPrice":"69.99",
      "TypicalWeightPerUnit":"0.5",
      "CountryOfManufacture":"Canada",
      "Range":"Adult",
      "OrderDate":"2018-01-01",
      "DeliveryMethod":"Post",
      "ExpectedDeliveryDate":"2018-02-02",
      "SupplierReference":"WWI2308"
    },
    {
      "StockItemName":"Panzer Video Game",
      "Supplier":"5",
      "UnitPackageId":"1",
      "OuterPackageId":"7",
      "Brand":"EA Sports",
      "LeadTimeDays":"5",
      "QuantityPerOuter":"1",
      "TaxRate":"6",
      "UnitPrice":"59.99",
      "RecommendedRetailPrice":"69.99",
      "TypicalWeightPerUnit":"0.5",
      "CountryOfManufacture":"Canada",
      "Range":"Adult",
      "OrderDate":"2018-01-025",
      "DeliveryMethod":"Post",
      "ExpectedDeliveryDate":"2018-02-02",
      "SupplierReference":"269622390"
    }
  ]
}
';
```

```
INSERT INTO  Warehouse.StockItems
SELECT *
FROM OPENJSON(@jsonda)
WITH(
StockItemID int '999',
StockItemName nvarchar(100)  '$.PurchaseOrders.StockItemName',
SupplierID  int '$.PurchaseOrders.Supplier' ,
UnitPackageId   int      '$.PurchaseOrders.UnitPackageId' ,
OuterPackageId     int    '$.PurchaseOrders.OuterPackageId[0]' ,
Brand    nvarchar(50)    '$.PurchaseOrders.Brand' ,
LeadTimeDays   int    '$.PurchaseOrders.LeadTimeDays',
QuantityPerOuter int '$.PurchaseOrders.QuantityPerOuter' ,
IsChillerStock bit  '0',
 TaxRate     decimal(18,3)   '$.PurchaseOrders.TaxRate',
  UnitPrice    decimal(18,2)   '$.PurchaseOrders.UnitPrice',
   RecommendedRetailPrice decimal(18,2)     '$.PurchaseOrders.RecommendedRetailPrice',
    TypicalWeightPerUnit   decimal(18,3)       '$.PurchaseOrders.TypicalWeightPerUnit',
   [CustomFields] nvarchar(100)   '{CountryOfManufacture:$.PurchaseOrders.CountryOfManufacture ,
Range: $.PurchaseOrders.Range}',
  SearchDetails nvarchar(max) 'USB food flash drive - chocolate bar ',
   LastEditedBy int '1'
   )
```

```
INSERT INTO Purchasing.PurchaseOrders
SELECT *
FROM OPENJSON(@jsonda)
WITH(
PurchaseOrderID int '999',
SupplierID int '$.PurchaseOrders.Supplier' ,
OrderDate date '$.PurchaseOrders.OrderDate',
DeliveryMethodID int '1',
ContactPersonID int '101',
ExpectedDeliveryDate date '$.PurchaseOrders.ExpectedDeliveryDate',
SupplierReference nvarchar(20) '$.PurchaseOrders.SupplierReference',
 IsOrderFinalized bit  '0',
  LastEditedBy int '1',
LastEditedWhen datetime2(7) '2013-01-02 07:00:00.0000000'
);
```

```
INSERT INTO Purchasing.PurchaseOrderLines
SELECT *
FROM OPENJSON(@jsonda)
WITH(
PurchaseOrderLineID int '999' ,
PurchaseOrderID int '999',
StockItemID int '999',
OrderedOuters int '999',
Description nvarchar(100) 'description',
ReceivedOuters int '999',
PackageTypeID int '999',
ExpectedUnitPricePerOuter decimal(18,2) '$.PurchaseOrders.UnitPrice',
IsOrderLineFinalized bit,
LastEditedBy int '1',
LastEditedWhen datetime2(7) '2013-01-02 07:00:00.0000000'
);
```

25. Revisit your answer in (19). Convert the result in JSON string and save it to the server using TSQL FOR JSON PATH.

```
SELECT *
FROM dbo.SIQuantByY2
FOR JSON PATH
```

26. Revisit your answer in (19). Convert the result into an XML string and save it to the server using TSQL FOR XML PATH.

```
SELECT orderyear ,
[Airline Novelties] as [AirlineNovelties],
[Clothing] AS [Clothing],
[Computing Novelties] as [ComputingNovelties],
[Furry Footwear] as [FurryFootwear],
[Mugs] as [mug],
[Novelty Items] as [NoveltyItems],
[Packaging Materials] AS [PackagingMaterials],
[Toys] as 'Toys',
[T-shirts] as [T-shirts],
[USB Novelties] AS [USBNovelties]
FROM dbo.SIQuantByY2
FOR XML PATH
```

27. Create a new table called ods.Confirmed Delivery Json with 3 columns (id, date, value) . Create a stored procedure, input is a date. The logic would load invoice information (all columns) as well as invoice line information (all columns) and forge them into a JSON string and then insert into the new table just created. Then write a query to run the stored procedure for each DATE that customer id 1 got something delivered to him.

```
CREATE TABLE [ods].[ConfirmedDeliveryJson] (
        [id] [uniqueidentifier] NOT NULL PRIMARY KEY,
        [date] [date] NOT NULL,
        [value] [nvarchar](max) NOT NULL)

ALTER TABLE ods.ConfirmedDeliveryJson
        ADD CONSTRAINT [value should be formatted as JSON]
                CHECK (ISJSON(value)=1)

CREATE PROCEDURE invoice_input_json
@searchDate DATE
AS
INSERT INTO ods.ConfirmedDeliveryJson
SELECT NEWID(), @searchDate, js
FROM
(SELECT(SELECT i.*, il.InvoiceLineID, il.StockItemID, il.Description, il.PackageTypeID,
il.Quantity, il.UnitPrice, il.TaxRate, il.TaxAmount, il.LineProfit,il.ExtendedPrice,
il.LastEditedBy AS [InvoiceLineLastEditedBy], il.LastEditedWhen AS [InvoiceLineLastEditedWhen]
FROM Sales.Invoices i
JOIN Sales.InvoiceLines il
ON i.InvoiceID = il.InvoiceID
WHERE i.InvoiceDate = '2013-01-01'
FOR JSON PATH) AS js) a

DECLARE @deliveryDate DATE;
SELECT @deliveryDate = MIN(CONVERT(DATE, ConfirmedDeliveryTime))
FROM Sales.Invoices
WHERE CustomerID = 1

WHILE @deliveryDate IS NOT NULL
BEGIN
EXEC invoice_input_json @deliveryDate
END
```

28. Write a short essay talking about your understanding of transactions, locks and isolation levels.

    Transactions are used to solve concurrency issues, and it has two outcomes: committed or rollbacked. All comments go together in the transaction, so it will all be committed or rollbacked. In nested transaction scenario, we can name a transaction as a save point.

    There are two types of concurrency control, optimistic and pessimistic. Optimistic concurrency control use row versioning, it has higher risk of rolling back transactions, but lower waiting times. Pessimistic concurrency control use locks. It has lower risk of rolling back transactions, but higher waiting time.

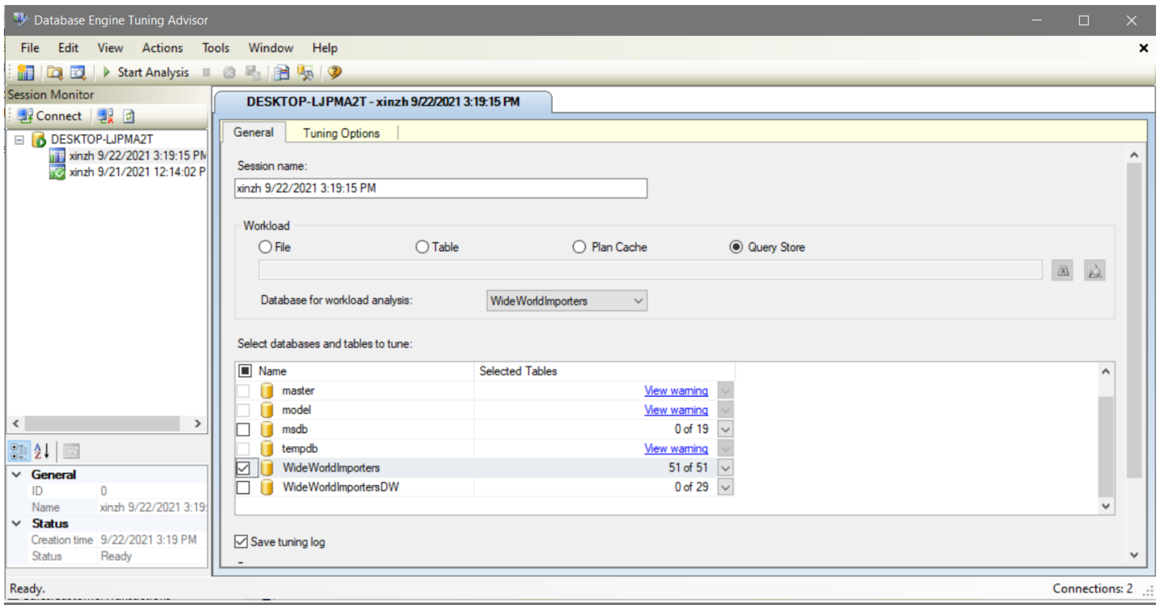
    Lock system prevents users from affecting other users when modifying data. When transaction tries to read data, a shared lock will be applied, and it can be shared. An update lock will be applied before the transaction make changes, and an exclusive lock will be applied when the transaction starts to commit, and will last until it committed or rollbacked.

    There are four isolation levels. Read uncommitted, read committed – which is the system default, repeatable read, and serializable. Repeatable read will read data repeatedly and will not release shared lock until committed. Serializable lock the range of the data.

29. Write a short essay, plus screenshots talking about performance tuning in SQL Server. Must include Tuning Advisor, Extended Events, DMV, Logs and Execution Plan.

Tuning Advisor

Tuning Advisor analyzes workloads to recommend indexes or partitioning strategies that will improve server's query performance. Here I used the Query Store as a workload.


Database Engine Tuning Advisor
File Edit View Actions Tools Window Help
Start Analysis
Session Monitor
Connect
General
Tuning Options

DESKTOP-LJPMA2T
xinzh 9/22/2021 3:19:15 PM
xinzh 9/21/2021 12:14:02 P

DESKTOP-LJPMA2T - xinzh 9/22/2021 3:19:15 PM

Session name: xinzh 9/22/2021 3:19:15 PM

Workload: ( ) File ( ) Table ( ) Plan Cache [✓ Query Store]

Database for workload analysis: WideWorldImporters

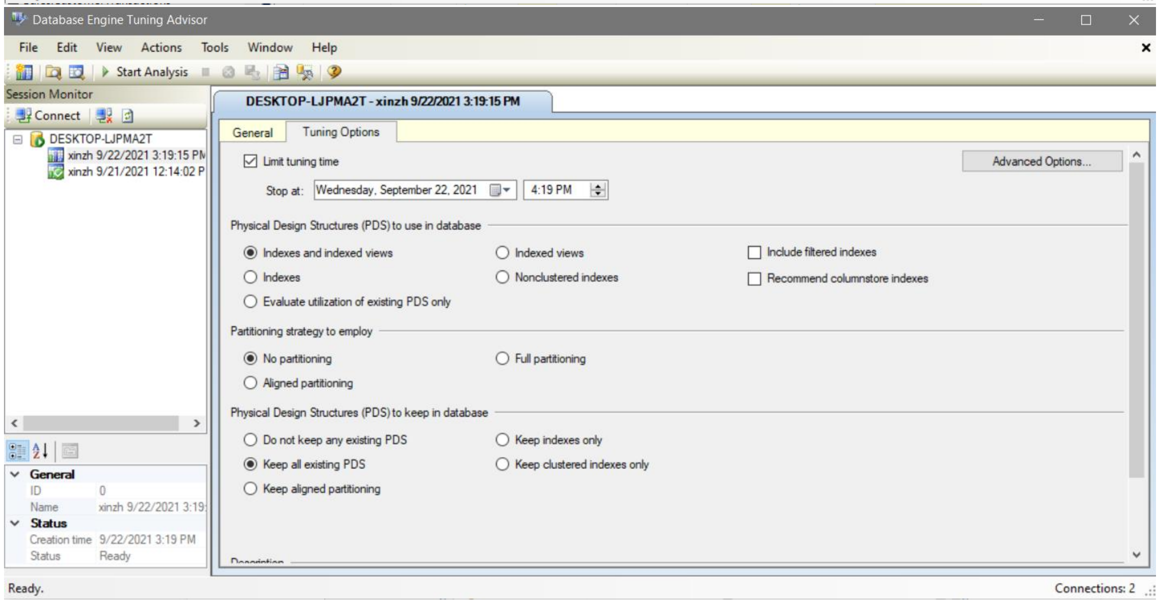
Select databases and tables to tune:

Name	Selected Tables
master	View warning
model	View warning
msdb	0 of 19
tempdb	View warning
☑ WideWorldImporters	51 of 51
WideWorldImportersDW	0 of 29

☑ Save tuning log

General	
ID	0
Name	xinzh 9/22/2021 3:19
Status	
Creation time	9/22/2021 3:19 PM
Status	Ready

Ready. Connections: 2



DESKTOP-LJPMA2T
xinzh 9/22/2021 3:19:15 PM
xinzh 9/21/2021 12:14:02 P

DESKTOP-LJPMA2T - xinzh 9/22/2021 3:19:15 PM

☑ Limit tuning time

Stop at: Wednesday, September 22, 2021 4:19 PM

Physical Design Structures (PDS) to use in database

[✓ Indexes and indexed views] ( ) Indexed views ☐ Include filtered indexes
( ) Indexes ( ) Nonclustered indexes ☐ Recommend columnstore indexes
( ) Evaluate utilization of existing PDS only

Partitioning strategy to employ

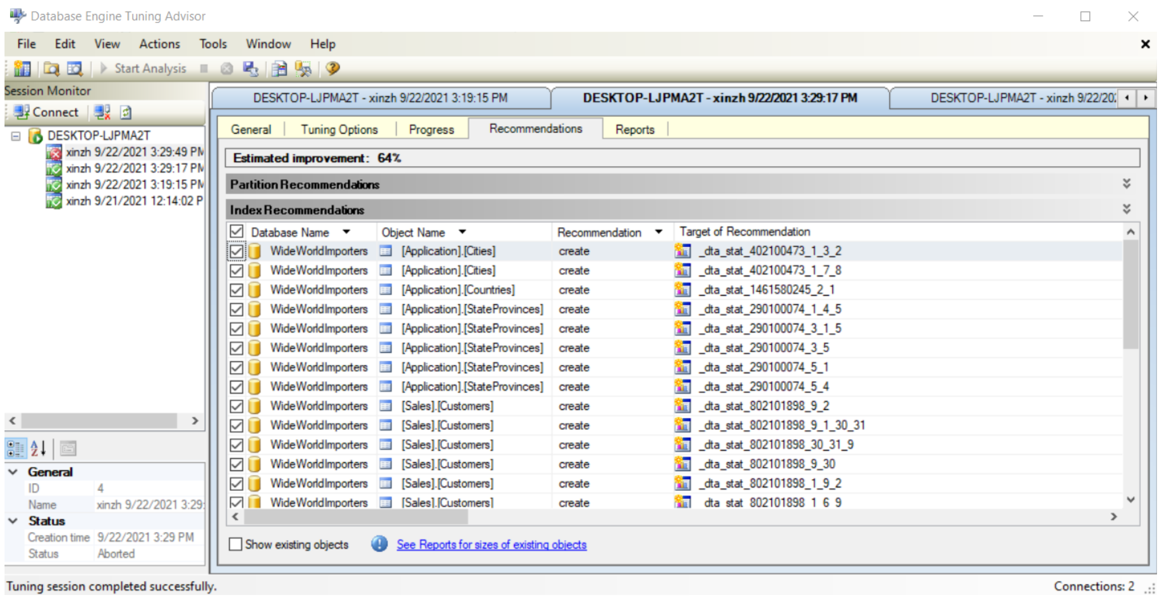
[✓ No partitioning] ( ) Full partitioning
( ) Aligned partitioning

Physical Design Structures (PDS) to keep in database

( ) Do not keep any existing PDS ( ) Keep indexes only
[✓ Keep all existing PDS] ( ) Keep clustered indexes only
( ) Keep aligned partitioning

General	
ID	0
Name	xinzh 9/22/2021 3:19
Status	
Creation time	9/22/2021 3:19 PM
Status	Ready

Ready. Connections: 2



Database Engine Tuning Advisor

File Edit View Actions Tools Window Help

Start Analysis

Session Monitor

Connect

DESKTOP-LJPMA2T
- xinzh 9/22/2021 3:29:49 PM
- xinzh 9/22/2021 3:29:17 PM
- xinzh 9/22/2021 3:19:15 PM
- xinzh 9/21/2021 12:14:02 P

General

ID	4
Name	xinzh 9/22/2021 3:29

Status

Creation time	9/22/2021 3:29 PM
Status	Aborted

DESKTOP-LJPMA2T - xinzh 9/22/2021 3:19:15 PM | **DESKTOP-LJPMA2T - xinzh 9/22/2021 3:29:17 PM** | DESKTOP-LJPMA2T - xinzh 9/22/20

General | Tuning Options | Progress | Recommendations | Reports

Estimated improvement: 64%

Partition Recommendations

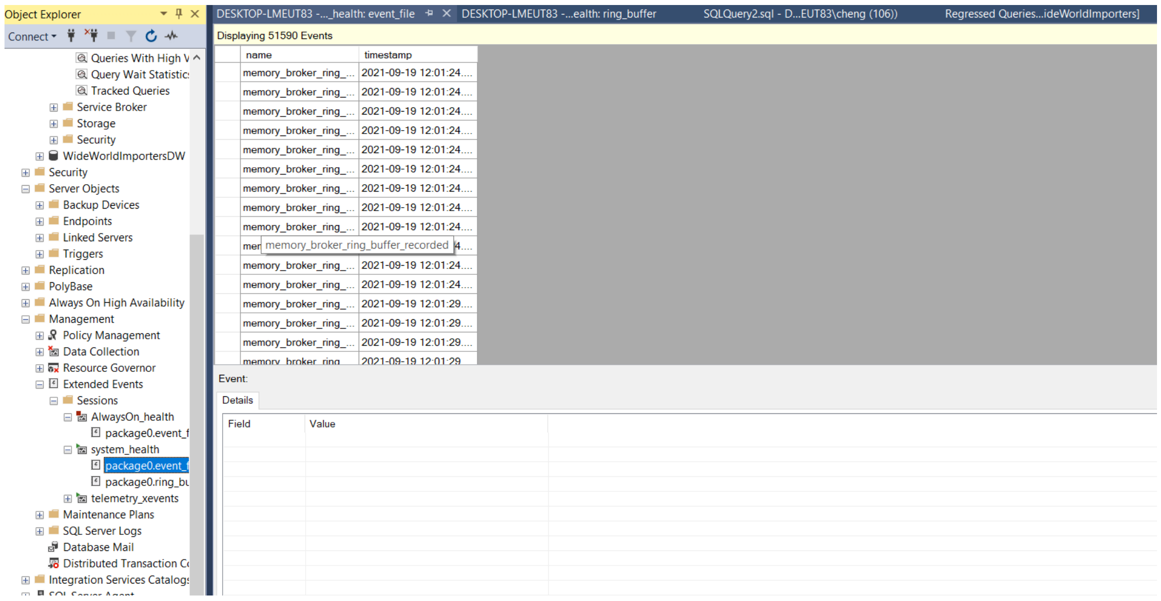
Index Recommendations

Database Name	Object Name	Recommendation	Target of Recommendation
✓ WideWorldImporters	[Application].[Cities]	create	_dta_stat_402100473_1_3_2
✓ WideWorldImporters	[Application].[Cities]	create	_dta_stat_402100473_1_7_8
✓ WideWorldImporters	[Application].[Countries]	create	_dta_stat_1461580245_2_1
✓ WideWorldImporters	[Application].[StateProvinces]	create	_dta_stat_290100074_1_4_5
✓ WideWorldImporters	[Application].[StateProvinces]	create	_dta_stat_290100074_3_1_5
✓ WideWorldImporters	[Application].[StateProvinces]	create	_dta_stat_290100074_3_5
✓ WideWorldImporters	[Application].[StateProvinces]	create	_dta_stat_290100074_5_1
✓ WideWorldImporters	[Application].[StateProvinces]	create	_dta_stat_290100074_5_4
✓ WideWorldImporters	[Sales].[Customers]	create	_dta_stat_802101898_9_2
✓ WideWorldImporters	[Sales].[Customers]	create	_dta_stat_802101898_9_1_30_31
✓ WideWorldImporters	[Sales].[Customers]	create	_dta_stat_802101898_30_31_9
✓ WideWorldImporters	[Sales].[Customers]	create	_dta_stat_802101898_9_30
✓ WideWorldImporters	[Sales].[Customers]	create	_dta_stat_802101898_1_9_2
✓ WideWorldImporters	[Sales].[Customers]	create	dta stat 802101898 1 6 9

Show existing objects   See Reports for sizes of existing objects

Tuning session completed successfully.   Connections: 2

Extended Event



Object Explorer

Connect

- Queries With High V
- Query Wait Statistic
- Tracked Queries
- Service Broker
- Storage
- Security
- WideWorldImportersDW
- Security
- Server Objects
  - Backup Devices
  - Endpoints
  - Linked Servers
  - Triggers
- Replication
- PolyBase
- Always On High Availability
- Management
  - Policy Management
  - Data Collection
  - Resource Governor
  - Extended Events
    - Sessions
      - AlwaysOn_health
        - package0.event_f
      - system_health
        - package0.event_f
        - package0.ring_bu
      - telemetry_xevents
  - Maintenance Plans
  - SQL Server Logs
  - Database Mail
  - Distributed Transaction Co
- Integration Services Catalogs
- SQL Server Agent

DESKTOP-LMEUT83 -..._health: event_file | DESKTOP-LMEUT83 -...ealth: ring_buffer | SQLQuery2.sql - D...EUT83\cheng (106)) | Regressed Queries...ideWorldImporters]

Displaying 51590 Events

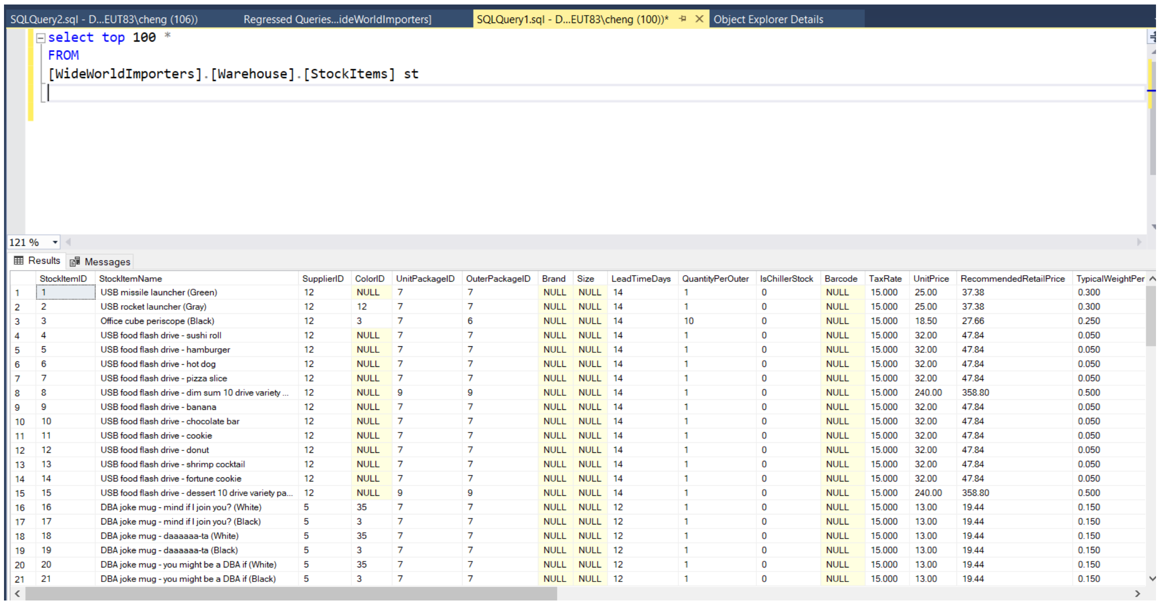
name	timestamp
memory_broker_ring_...	2021-09-19 12:01:24....
memory_broker_ring_...	2021-09-19 12:01:24....
memory_broker_ring_...	2021-09-19 12:01:24....
memory_broker_ring_...	2021-09-19 12:01:24....
memory_broker_ring_...	2021-09-19 12:01:24....
memory_broker_ring_...	2021-09-19 12:01:24....
memory_broker_ring_...	2021-09-19 12:01:24....
memory_broker_ring_...	2021-09-19 12:01:24....
memory_broker_ring_...	2021-09-19 12:01:24....
mer memory_broker_ring_buffer_recorded	4....
memory_broker_ring_...	2021-09-19 12:01:24....
memory_broker_ring_...	2021-09-19 12:01:24....
memory_broker_ring_...	2021-09-19 12:01:29....
memory_broker_ring_...	2021-09-19 12:01:29....
memory_broker_ring_...	2021-09-19 12:01:29....
memory_broker_ring_...	2021-09-19 12:01:29

Event:

Details

Field	Value

DMV



SQLQuery2.sql - D...EUT83\cheng (106)) | Regressed Queries...ideWorldImporters] | SQLQuery1.sql - D...EUT83\cheng (100))* | Object Explorer Details

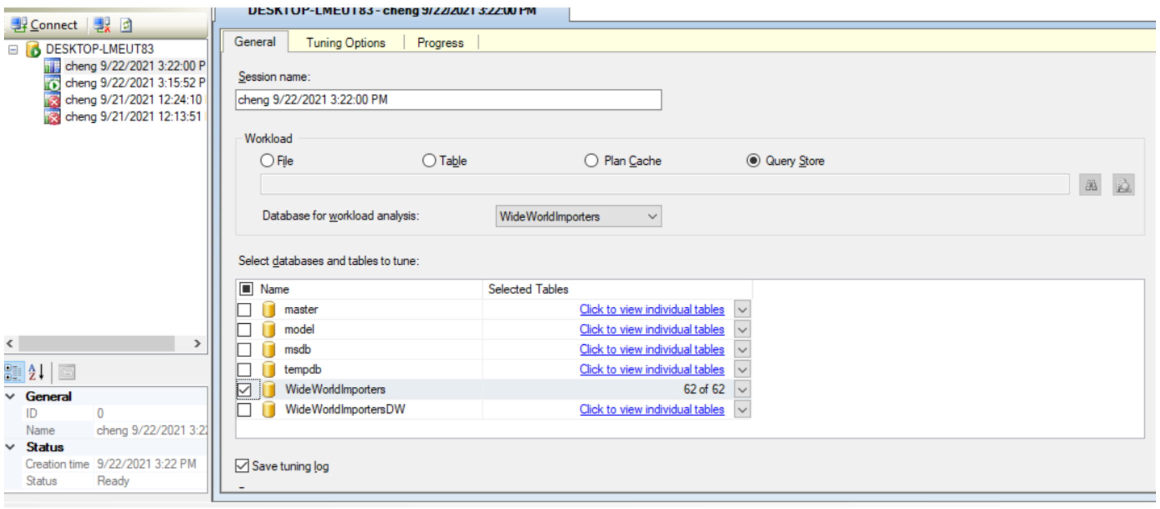
```sql
select top 100 *
FROM
[WideWorldImporters].[Warehouse].[StockItems] st
```

121 %

Results | Messages

	StockItemID	StockItemName	SupplierID	ColorID	UnitPackageID	OuterPackageID	Brand	Size	LeadTimeDays	QuantityPerOuter	IsChillerStock	Barcode	TaxRate	UnitPrice	RecommendedRetailPrice	TypicalWeightPer
1	1	USB missile launcher (Green)	12	NULL	7	7	NULL	NULL	14	1	0	NULL	15.000	25.00	37.38	0.300
2	2	USB rocket launcher (Gray)	12	12	7	7	NULL	NULL	14	1	0	NULL	15.000	25.00	37.38	0.300
3	3	Office cube periscope (Black)	12	3	7	6	NULL	NULL	14	10	0	NULL	15.000	18.50	27.66	0.250
4	4	USB food flash drive - sushi roll	12	NULL	7	7	NULL	NULL	14	1	0	NULL	15.000	32.00	47.84	0.050
5	5	USB food flash drive - hamburger	12	NULL	7	7	NULL	NULL	14	1	0	NULL	15.000	32.00	47.84	0.050
6	6	USB food flash drive - hot dog	12	NULL	7	7	NULL	NULL	14	1	0	NULL	15.000	32.00	47.84	0.050
7	7	USB food flash drive - pizza slice	12	NULL	7	7	NULL	NULL	14	1	0	NULL	15.000	32.00	47.84	0.050
8	8	USB food flash drive - dim sum 10 drive variety ...	12	NULL	9	9	NULL	NULL	14	1	0	NULL	15.000	240.00	358.80	0.500
9	9	USB food flash drive - banana	12	NULL	7	7	NULL	NULL	14	1	0	NULL	15.000	32.00	47.84	0.050
10	10	USB food flash drive - chocolate bar	12	NULL	7	7	NULL	NULL	14	1	0	NULL	15.000	32.00	47.84	0.050
11	11	USB food flash drive - cookie	12	NULL	7	7	NULL	NULL	14	1	0	NULL	15.000	32.00	47.84	0.050
12	12	USB food flash drive - donut	12	NULL	7	7	NULL	NULL	14	1	0	NULL	15.000	32.00	47.84	0.050
13	13	USB food flash drive - shrimp cocktail	12	NULL	7	7	NULL	NULL	14	1	0	NULL	15.000	32.00	47.84	0.050
14	14	USB food flash drive - fortune cookie	12	NULL	7	7	NULL	NULL	14	1	0	NULL	15.000	32.00	47.84	0.050
15	15	USB food flash drive - dessert 10 drive variety pa...	12	NULL	9	9	NULL	NULL	14	1	0	NULL	15.000	240.00	358.80	0.500
16	16	DBA joke mug - mind if I join you? (White)	5	35	7	7	NULL	NULL	12	1	0	NULL	15.000	13.00	19.44	0.150
17	17	DBA joke mug - mind if I join you? (Black)	5	3	7	7	NULL	NULL	12	1	0	NULL	15.000	13.00	19.44	0.150
18	18	DBA joke mug - daaaaaa-ta (White)	5	35	7	7	NULL	NULL	12	1	0	NULL	15.000	13.00	19.44	0.150
19	19	DBA joke mug - daaaaaa-ta (Black)	5	3	7	7	NULL	NULL	12	1	0	NULL	15.000	13.00	19.44	0.150
20	20	DBA joke mug - you might be a DBA if (White)	5	35	7	7	NULL	NULL	12	1	0	NULL	15.000	13.00	19.44	0.150
21	21	DBA joke mug - you might be a DBA if (Black)	5	3	7	7	NULL	NULL	12	1	0	NULL	15.000	13.00	19.44	0.150

logs



Connect

DESKTOP-LMEUT83
- cheng 9/22/2021 3:22:00 P
- cheng 9/22/2021 3:15:52 P
- cheng 9/21/2021 12:24:10
- cheng 9/21/2021 12:13:51

General
ID	0
Name	cheng 9/22/2021 3:2

Status
Creation time	9/22/2021 3:22 PM
Status	Ready

DESKTOP-LMEUT83 - cheng 9/22/2021 3:22:00 PM

General | Tuning Options | Progress

Session name: cheng 9/22/2021 3:22:00 PM

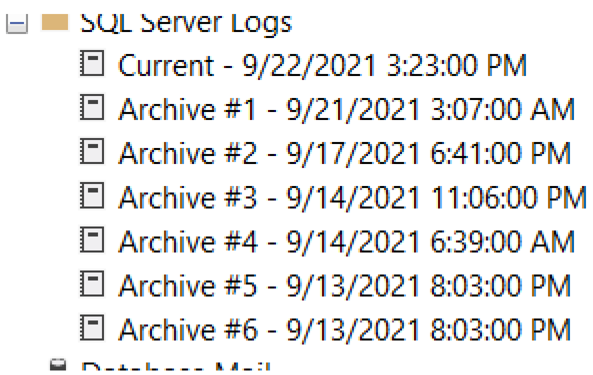
Workload: File [ ] Table [ ] Plan Cache [ ] [● Query Store]

Database for workload analysis: WideWorldImporters

Select databases and tables to tune:

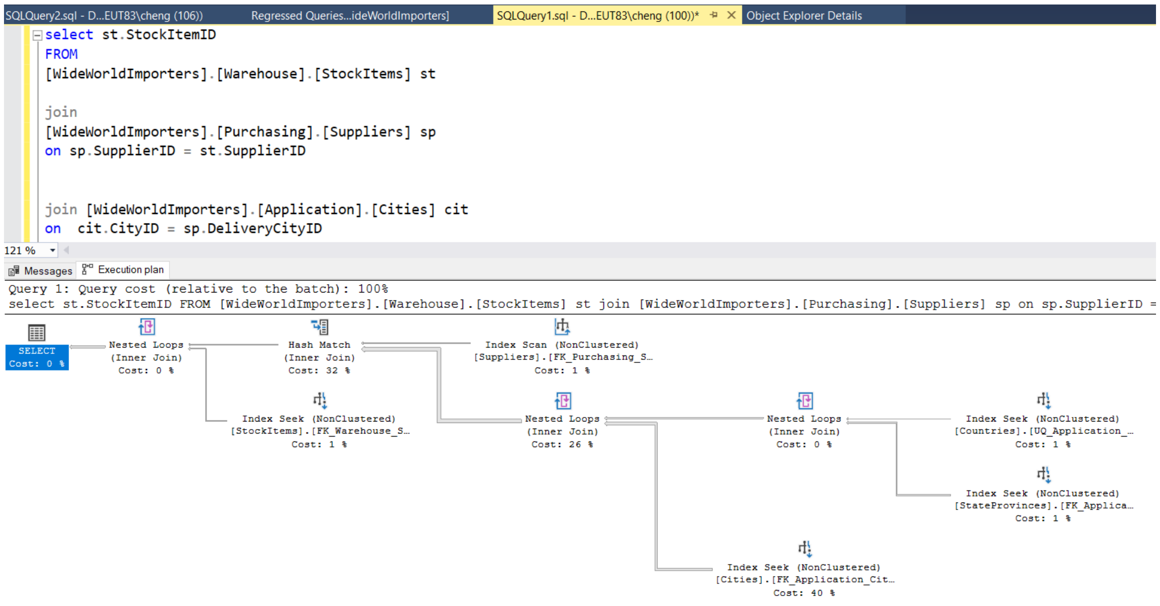
	Name	Selected Tables
☐	master	Click to view individual tables
☐	model	Click to view individual tables
☐	msdb	Click to view individual tables
☐	tempdb	Click to view individual tables
✓	WideWorldImporters	62 of 62
☐	WideWorldImportersDW	Click to view individual tables

✓ Save tuning log



SQL Server Logs
- Current - 9/22/2021 3:23:00 PM
- Archive #1 - 9/21/2021 3:07:00 AM
- Archive #2 - 9/17/2021 6:41:00 PM
- Archive #3 - 9/14/2021 11:06:00 PM
- Archive #4 - 9/14/2021 6:39:00 AM
- Archive #5 - 9/13/2021 8:03:00 PM
- Archive #6 - 9/13/2021 8:03:00 PM

Execution Plan

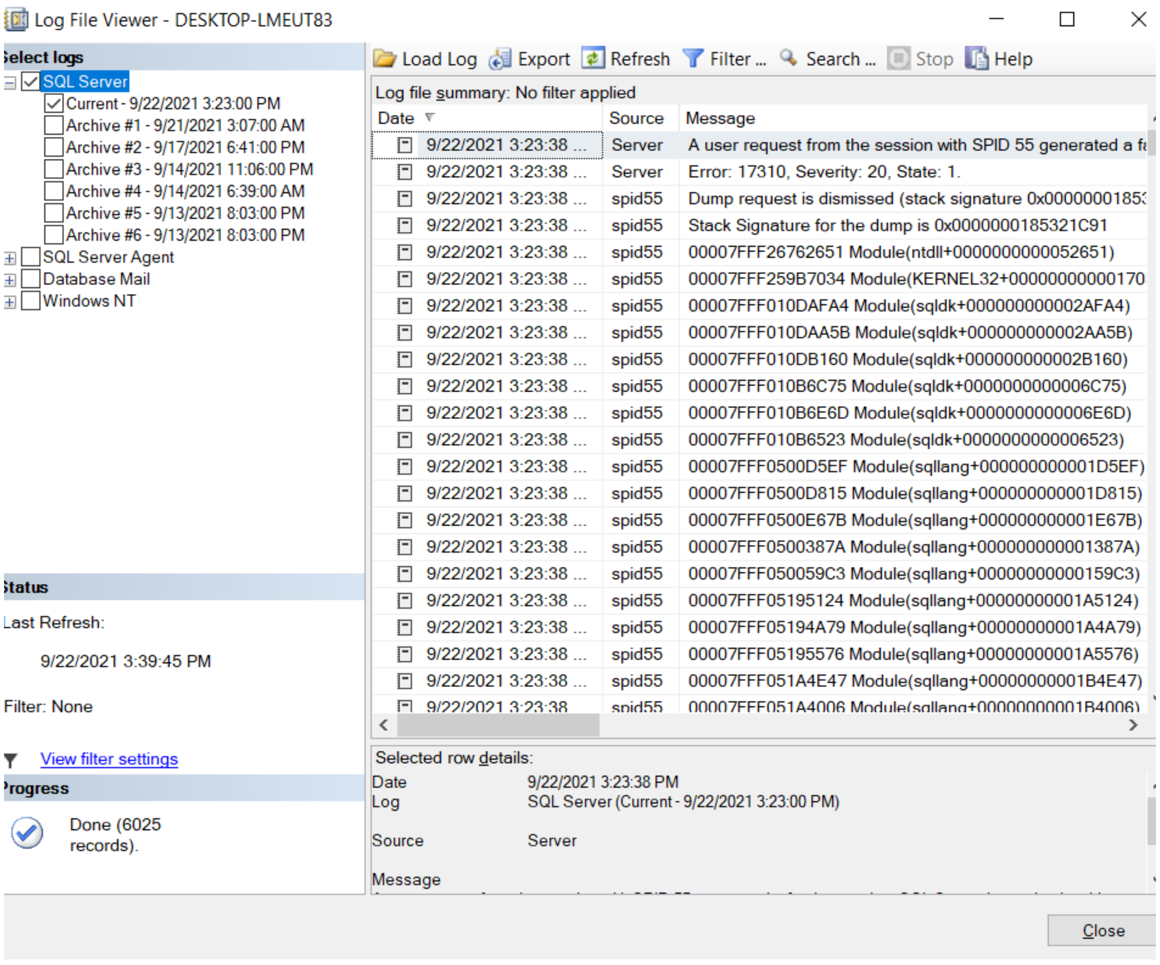

SQLQuery2.sql - D...EUT83\cheng (106))
Regressed Queries...ideWorldImporters]
SQLQuery1.sql - D...EUT83\cheng (100))*
Object Explorer Details
121 %
Messages
Execution plan
SELECT
Cost: 0 %
Nested Loops
(Inner Join)
Cost: 0 %
Hash Match
(Inner Join)
Cost: 32 %
Index Scan (NonClustered)
[Suppliers].[FK_Purchasing_S…
Cost: 1 %
Index Seek (NonClustered)
[StockItems].[FK_Warehouse_S…
Cost: 1 %
Nested Loops
(Inner Join)
Cost: 26 %
Nested Loops
(Inner Join)
Cost: 0 %
Index Seek (NonClustered)
[Countries].[UQ_Application_…
Cost: 1 %
Index Seek (NonClustered)
[StateProvinces].[FK_Applica…
Cost: 1 %
Index Seek (NonClustered)
[Cities].[FK_Application_Cit…
Cost: 40 %

```sql
select st.StockItemID
FROM
[WideWorldImporters].[Warehouse].[StockItems] st

join
[WideWorldImporters].[Purchasing].[Suppliers] sp
on sp.SupplierID = st.SupplierID


join [WideWorldImporters].[Application].[Cities] cit
on  cit.CityID = sp.DeliveryCityID
```

```
Query 1: Query cost (relative to the batch): 100%
select st.StockItemID FROM [WideWorldImporters].[Warehouse].[StockItems] st join [WideWorldImporters].[Purchasing].[Suppliers] sp on sp.SupplierID =
```



Select logs
- SQL Server
  - Current - 9/22/2021 3:23:00 PM
  - Archive #1 - 9/21/2021 3:07:00 AM
  - Archive #2 - 9/17/2021 6:41:00 PM
  - Archive #3 - 9/14/2021 11:06:00 PM
  - Archive #4 - 9/14/2021 6:39:00 AM
  - Archive #5 - 9/13/2021 8:03:00 PM
  - Archive #6 - 9/13/2021 8:03:00 PM
- SQL Server Agent
- Database Mail
- Windows NT

Status

Last Refresh:

9/22/2021 3:39:45 PM

Filter: None

View filter settings

Progress

Done (6025 records).

Log file summary: No filter applied

```
Date                  Source   Message
9/22/2021 3:23:38 ... Server   A user request from the session with SPID 55 generated a fa
9/22/2021 3:23:38 ... Server   Error: 17310, Severity: 20, State: 1.
9/22/2021 3:23:38 ... spid55   Dump request is dismissed (stack signature 0x00000001853
9/22/2021 3:23:38 ... spid55   Stack Signature for the dump is 0x0000000185321C91
9/22/2021 3:23:38 ... spid55   00007FFF26762651 Module(ntdll+0000000000052651)
9/22/2021 3:23:38 ... spid55   00007FFF259B7034 Module(KERNEL32+00000000000170
9/22/2021 3:23:38 ... spid55   00007FFF010DAFA4 Module(sqldk+000000000002AFA4)
9/22/2021 3:23:38 ... spid55   00007FFF010DAA5B Module(sqldk+000000000002AA5B)
9/22/2021 3:23:38 ... spid55   00007FFF010DB160 Module(sqldk+000000000002B160)
9/22/2021 3:23:38 ... spid55   00007FFF010B6C75 Module(sqldk+0000000000006C75)
9/22/2021 3:23:38 ... spid55   00007FFF010B6E6D Module(sqldk+0000000000006E6D)
9/22/2021 3:23:38 ... spid55   00007FFF010B6523 Module(sqldk+0000000000006523)
9/22/2021 3:23:38 ... spid55   00007FFF0500D5EF Module(sqllang+000000000001D5EF)
9/22/2021 3:23:38 ... spid55   00007FFF0500D815 Module(sqllang+000000000001D815)
9/22/2021 3:23:38 ... spid55   00007FFF0500E67B Module(sqllang+000000000001E67B)
9/22/2021 3:23:38 ... spid55   00007FFF0500387A Module(sqllang+000000000001387A)
9/22/2021 3:23:38 ... spid55   00007FFF050059C3 Module(sqllang+00000000000159C3)
9/22/2021 3:23:38 ... spid55   00007FFF05195124 Module(sqllang+00000000001A5124)
9/22/2021 3:23:38 ... spid55   00007FFF05194A79 Module(sqllang+00000000001A4A79)
9/22/2021 3:23:38 ... spid55   00007FFF05195576 Module(sqllang+00000000001A5576)
9/22/2021 3:23:38 ... spid55   00007FFF051A4E47 Module(sqllang+00000000001B4E47)
9/22/2021 3:23:38 ... spid55   00007FFF051A4006 Module(sqllang+00000000001B4006)
```

Selected row details:

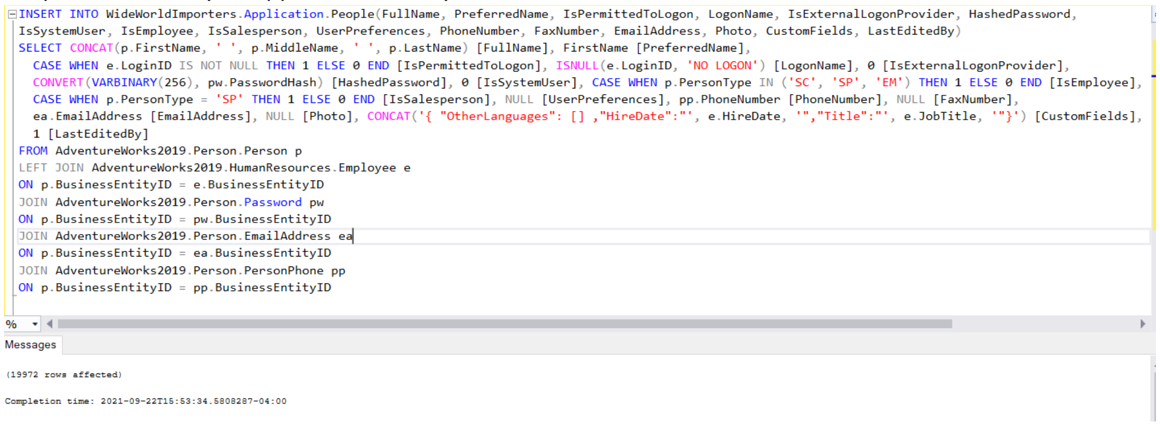
Date	9/22/2021 3:23:38 PM
Log	SQL Server (Current - 9/22/2021 3:23:00 PM)
Source	Server
Message	

Assignments 30 - 32 are group assignments.

30. Write a short essay talking about a scenario: Good news everyone! We (Wide World Importers) just brought out a small company called “Adventure works”! Now that bike shop is our sub-company. The first thing of all works pending would be to merge the user logon information, person information (including emails, phone numbers) and products (of course, add category, colors) to WWI database. Include screenshot, mapping and query.

Moving person and user logon information:

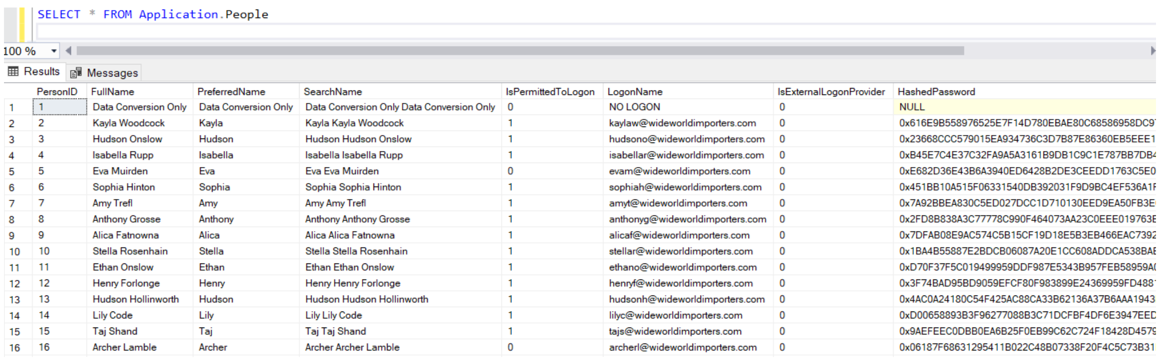
INSERT INTO WideWorldImporters.Application.People(FullName, PreferredName, IsPermittedToLogon, LogonName, IsExternalLogonProvider, HashedPassword,
IsSystemUser, IsEmployee, IsSalesperson, UserPreferences, PhoneNumber, FaxNumber, EmailAddress, Photo, CustomFields, LastEditedBy)
SELECT CONCAT(p.FirstName, ' ', p.MiddleName, ' ', p.LastName) [FullName], FirstName [PreferredName],
CASE WHEN e.LoginID IS NOT NULL THEN 1 ELSE 0 END [IsPermittedToLogon], ISNULL(e.LoginID, 'NO LOGON') [LogonName], 0 [IsExternalLogonProvider],
CONVERT(VARBINARY(256), pw.PasswordHash) [HashedPassword], 0 [IsSystemUser], CASE WHEN p.PersonType IN ('SC', 'SP', 'EM') THEN 1 ELSE 0 END [IsEmployee],
CASE WHEN p.PersonType = 'SP' THEN 1 ELSE 0 END [IsSalesperson], NULL [UserPreferences], pp.PhoneNumber [PhoneNumber], NULL [FaxNumber],
ea.EmailAddress [EmailAddress], NULL [Photo], CONCAT('{ "OtherLanguages": [] ,"HireDate":"', e.HireDate, '","Title":"', e.JobTitle, '"}') [CustomFields],
1 [LastEditedBy]
FROM AdventureWorks2019.Person.Person p
LEFT JOIN AdventureWorks2019.HumanResources.Employee e
ON p.BusinessEntityID = e.BusinessEntityID
JOIN AdventureWorks2019.Person.Password pw
ON p.BusinessEntityID = pw.BusinessEntityID
JOIN AdventureWorks2019.Person.EmailAddress ea
ON p.BusinessEntityID = ea.BusinessEntityID
JOIN AdventureWorks2019.Person.PersonPhone pp
ON p.BusinessEntityID = pp.BusinessEntityID



```
INSERT INTO WideWorldImporters.Application.People(FullName, PreferredName, IsPermittedToLogon, LogonName, IsExternalLogonProvider, HashedPassword,
IsSystemUser, IsEmployee, IsSalesperson, UserPreferences, PhoneNumber, FaxNumber, EmailAddress, Photo, CustomFields, LastEditedBy)
SELECT CONCAT(p.FirstName, ' ', p.MiddleName, ' ', p.LastName) [FullName], FirstName [PreferredName],
  CASE WHEN e.LoginID IS NOT NULL THEN 1 ELSE 0 END [IsPermittedToLogon], ISNULL(e.LoginID, 'NO LOGON') [LogonName], 0 [IsExternalLogonProvider],
  CONVERT(VARBINARY(256), pw.PasswordHash) [HashedPassword], 0 [IsSystemUser], CASE WHEN p.PersonType IN ('SC', 'SP', 'EM') THEN 1 ELSE 0 END [IsEmployee],
  CASE WHEN p.PersonType = 'SP' THEN 1 ELSE 0 END [IsSalesperson], NULL [UserPreferences], pp.PhoneNumber [PhoneNumber], NULL [FaxNumber],
  ea.EmailAddress [EmailAddress], NULL [Photo], CONCAT('{ "OtherLanguages": [] ,"HireDate":"', e.HireDate, '","Title":"', e.JobTitle, '"}') [CustomFields],
  1 [LastEditedBy]
FROM AdventureWorks2019.Person.Person p
LEFT JOIN AdventureWorks2019.HumanResources.Employee e
ON p.BusinessEntityID = e.BusinessEntityID
JOIN AdventureWorks2019.Person.Password pw
ON p.BusinessEntityID = pw.BusinessEntityID
JOIN AdventureWorks2019.Person.EmailAddress ea
ON p.BusinessEntityID = ea.BusinessEntityID
JOIN AdventureWorks2019.Person.PersonPhone pp
ON p.BusinessEntityID = pp.BusinessEntityID
```

```
(19972 rows affected)

Completion time: 2021-09-22T15:53:34.5808287-04:00
```



```
SELECT * FROM Application.People
```

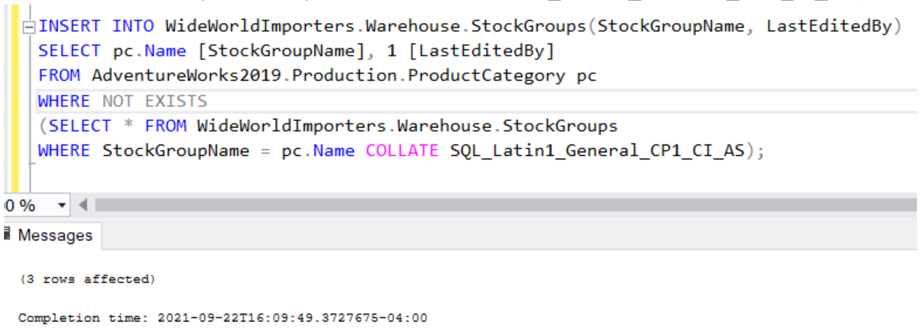
100 %

Results | Messages

	PersonID	FullName	PreferredName	SearchName	IsPermittedToLogon	LogonName	IsExternalLogonProvider	HashedPassword
1	1	Data Conversion Only	Data Conversion Only	Data Conversion Only Data Conversion Only	0	NO LOGON	0	NULL
2	2	Kayla Woodcock	Kayla	Kayla Kayla Woodcock	1	kaylaw@wideworldimporters.com	0	0x616E9B558976525E7F14D780EBAE80C68586958DC9
3	3	Hudson Onslow	Hudson	Hudson Hudson Onslow	1	hudsono@wideworldimporters.com	0	0x23668CCC579015EA934736C3D7B87E86360EB5EEE1
4	4	Isabella Rupp	Isabella	Isabella Isabella Rupp	1	isabellar@wideworldimporters.com	0	0xB45E7C4E37C32FA9A5A3161B9DB1C9C1E787BB7DB
5	5	Eva Muirden	Eva	Eva Eva Muirden	0	evam@wideworldimporters.com	0	0xE682D36E43B6A3940ED6428B2DE3CEEDD1763C5E0
6	6	Sophia Hinton	Sophia	Sophia Sophia Hinton	1	sophiah@wideworldimporters.com	0	0x451BB10A515F06331540DB392031F9D9BC4EF536A1
7	7	Amy Trefl	Amy	Amy Amy Trefl	1	amyt@wideworldimporters.com	0	0x7A92BBEA830C5ED027DCC1D710130EED9EA50FB3E
8	8	Anthony Grosse	Anthony	Anthony Anthony Grosse	1	anthonyg@wideworldimporters.com	0	0x2FD8B838A3C77778C990F464073AA23C0EEE019763
9	9	Alica Fatnowna	Alica	Alica Alica Fatnowna	1	alicaf@wideworldimporters.com	0	0x7DFAB08E9AC574C5B15CF19D18E5B3EB466EAC7392
10	10	Stella Rosenhain	Stella	Stella Stella Rosenhain	1	stellar@wideworldimporters.com	0	0x1BA4B55887E2BDCB06087A20E1CC608ADDCA538BA
11	11	Ethan Onslow	Ethan	Ethan Ethan Onslow	1	ethano@wideworldimporters.com	0	0xD70F37F5C019499959DDF987E5343B957FEB58959A
12	12	Henry Forlonge	Henry	Henry Henry Forlonge	1	henryf@wideworldimporters.com	0	0x3F74BAD95BD9059EFCF80F983899E24369959FD488
13	13	Hudson Hollinworth	Hudson	Hudson Hudson Hollinworth	1	hudsonh@wideworldimporters.com	0	0x4AC0A24180C54F425AC88CA33B62136A37B6AAA1943
14	14	Lily Code	Lily	Lily Lily Code	1	lilyc@wideworldimporters.com	0	0xD00658893B3F96277088B3C71DCFBF4DF6E3947EED
15	15	Taj Shand	Taj	Taj Taj Shand	1	tajs@wideworldimporters.com	0	0x9AEFEEC0DBB0EA6B25F0EB99C62C724F18428D457
16	16	Archer Lamble	Archer	Archer Archer Lamble	0	archerl@wideworldimporters.com	0	0x06187F68631295411B022C48B07338F20F4C5C73B31

Moving product group information:

INSERT INTO WideWorldImporters.Warehouse.StockGroups(StockGroupName, LastEditedBy)
SELECT pc.Name [StockGroupName], 1 [LastEditedBy]
FROM AdventureWorks2019.Production.ProductCategory pc
WHERE NOT EXISTS
*(SELECT * FROM WideWorldImporters.Warehouse.StockGroups*
WHERE StockGroupName = pc.Name COLLATE SQL_Latin1_General_CP1_CI_AS);



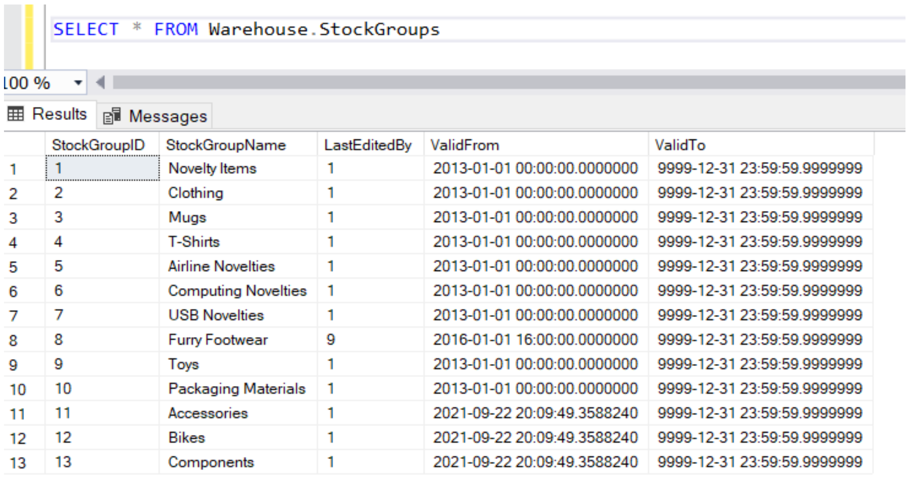
```
INSERT INTO WideWorldImporters.Warehouse.StockGroups(StockGroupName, LastEditedBy)
SELECT pc.Name [StockGroupName], 1 [LastEditedBy]
FROM AdventureWorks2019.Production.ProductCategory pc
WHERE NOT EXISTS
(SELECT * FROM WideWorldImporters.Warehouse.StockGroups
WHERE StockGroupName = pc.Name COLLATE SQL_Latin1_General_CP1_CI_AS);
```

0 %

Messages

```
(3 rows affected)

Completion time: 2021-09-22T16:09:49.3727675-04:00
```



```
SELECT * FROM Warehouse.StockGroups
```

100 %

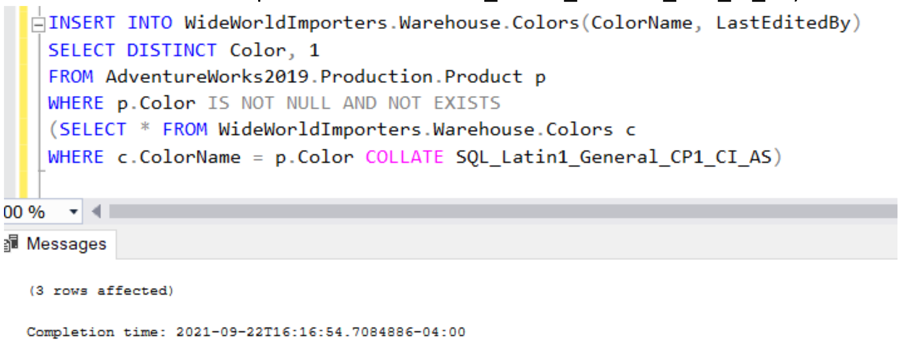
Results | Messages

	StockGroupID	StockGroupName	LastEditedBy	ValidFrom	ValidTo
1	1	Novelty Items	1	2013-01-01 00:00:00.0000000	9999-12-31 23:59:59.9999999
2	2	Clothing	1	2013-01-01 00:00:00.0000000	9999-12-31 23:59:59.9999999
3	3	Mugs	1	2013-01-01 00:00:00.0000000	9999-12-31 23:59:59.9999999
4	4	T-Shirts	1	2013-01-01 00:00:00.0000000	9999-12-31 23:59:59.9999999
5	5	Airline Novelties	1	2013-01-01 00:00:00.0000000	9999-12-31 23:59:59.9999999
6	6	Computing Novelties	1	2013-01-01 00:00:00.0000000	9999-12-31 23:59:59.9999999
7	7	USB Novelties	1	2013-01-01 00:00:00.0000000	9999-12-31 23:59:59.9999999
8	8	Furry Footwear	9	2016-01-01 16:00:00.0000000	9999-12-31 23:59:59.9999999
9	9	Toys	1	2013-01-01 00:00:00.0000000	9999-12-31 23:59:59.9999999
10	10	Packaging Materials	1	2013-01-01 00:00:00.0000000	9999-12-31 23:59:59.9999999
11	11	Accessories	1	2021-09-22 20:09:49.3588240	9999-12-31 23:59:59.9999999
12	12	Bikes	1	2021-09-22 20:09:49.3588240	9999-12-31 23:59:59.9999999
13	13	Components	1	2021-09-22 20:09:49.3588240	9999-12-31 23:59:59.9999999

Moving color information:

INSERT INTO WideWorldImporters.Warehouse.Colors(ColorName, LastEditedBy)
SELECT DISTINCT Color, 1
FROM AdventureWorks2019.Production.Product p

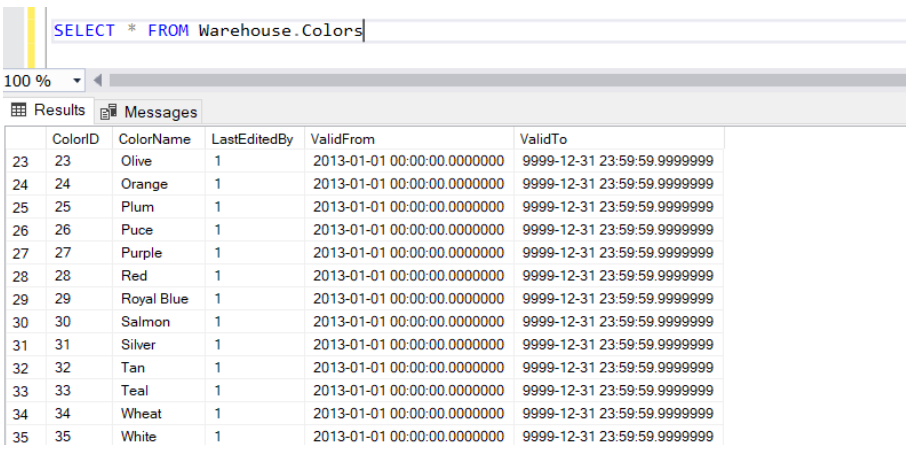
WHERE p.Color IS NOT NULL AND NOT EXISTS
(SELECT * FROM WideWorldImporters.Warehouse.Colors c
WHERE c.ColorName = p.Color COLLATE SQL_Latin1_General_CP1_CI_AS)



```
INSERT INTO WideWorldImporters.Warehouse.Colors(ColorName, LastEditedBy)
SELECT DISTINCT Color, 1
FROM AdventureWorks2019.Production.Product p
WHERE p.Color IS NOT NULL AND NOT EXISTS
(SELECT * FROM WideWorldImporters.Warehouse.Colors c
WHERE c.ColorName = p.Color COLLATE SQL_Latin1_General_CP1_CI_AS)
```

```
(3 rows affected)

Completion time: 2021-09-22T16:16:54.7084886-04:00
```

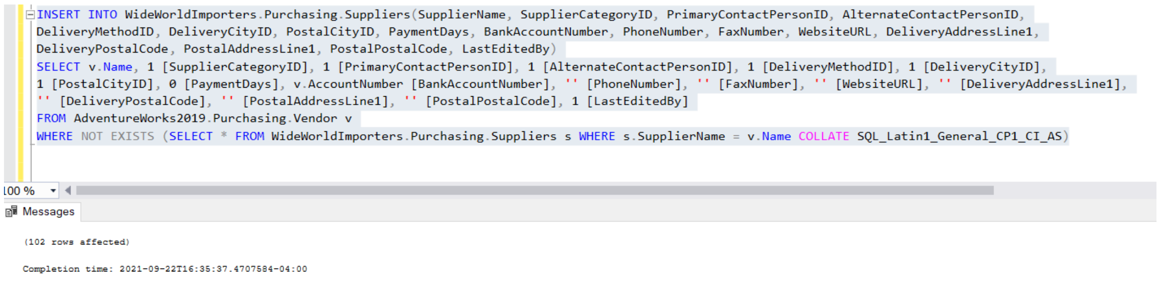


```
SELECT * FROM Warehouse.Colors
```

	ColorID	ColorName	LastEditedBy	ValidFrom	ValidTo
23	23	Olive	1	2013-01-01 00:00:00.0000000	9999-12-31 23:59:59.9999999
24	24	Orange	1	2013-01-01 00:00:00.0000000	9999-12-31 23:59:59.9999999
25	25	Plum	1	2013-01-01 00:00:00.0000000	9999-12-31 23:59:59.9999999
26	26	Puce	1	2013-01-01 00:00:00.0000000	9999-12-31 23:59:59.9999999
27	27	Purple	1	2013-01-01 00:00:00.0000000	9999-12-31 23:59:59.9999999
28	28	Red	1	2013-01-01 00:00:00.0000000	9999-12-31 23:59:59.9999999
29	29	Royal Blue	1	2013-01-01 00:00:00.0000000	9999-12-31 23:59:59.9999999
30	30	Salmon	1	2013-01-01 00:00:00.0000000	9999-12-31 23:59:59.9999999
31	31	Silver	1	2013-01-01 00:00:00.0000000	9999-12-31 23:59:59.9999999
32	32	Tan	1	2013-01-01 00:00:00.0000000	9999-12-31 23:59:59.9999999
33	33	Teal	1	2013-01-01 00:00:00.0000000	9999-12-31 23:59:59.9999999
34	34	Wheat	1	2013-01-01 00:00:00.0000000	9999-12-31 23:59:59.9999999
35	35	White	1	2013-01-01 00:00:00.0000000	9999-12-31 23:59:59.9999999

Moving vendor information:

INSERT INTO WideWorldImporters.Purchasing.Suppliers(SupplierName, SupplierCategoryID, PrimaryContactPersonID, AlternateContactPersonID,
DeliveryMethodID, DeliveryCityID, PostalCityID, PaymentDays, BankAccountNumber, PhoneNumber, FaxNumber, WebsiteURL, DeliveryAddressLine1,
DeliveryPostalCode, PostalAddressLine1, PostalPostalCode, LastEditedBy)
SELECT v.Name, 1 [SupplierCategoryID], 1 [PrimaryContactPersonID], 1 [AlternateContactPersonID], 1 [DeliveryMethodID], 1 [DeliveryCityID],
1 [PostalCityID], 0 [PaymentDays], v.AccountNumber [BankAccountNumber], '' [PhoneNumber], '' [FaxNumber], '' [WebsiteURL], '' [DeliveryAddressLine1],
'' [DeliveryPostalCode], '' [PostalAddressLine1], '' [PostalPostalCode], 1 [LastEditedBy]
FROM AdventureWorks2019.Purchasing.Vendor v
*WHERE NOT EXISTS (SELECT * FROM WideWorldImporters.Purchasing.Suppliers s WHERE s.SupplierName = v.Name COLLATE SQL_Latin1_General_CP1_CI_AS)*



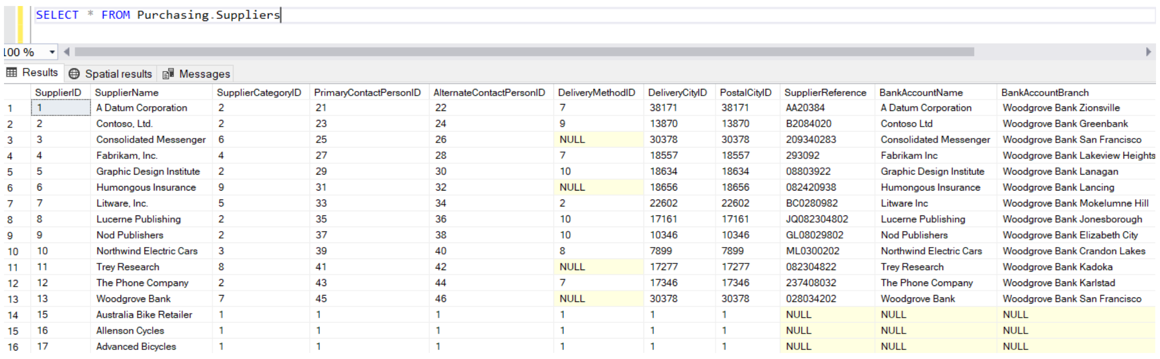
```
INSERT INTO WideWorldImporters.Purchasing.Suppliers(SupplierName, SupplierCategoryID, PrimaryContactPersonID, AlternateContactPersonID,
DeliveryMethodID, DeliveryCityID, PostalCityID, PaymentDays, BankAccountNumber, PhoneNumber, FaxNumber, WebsiteURL, DeliveryAddressLine1,
DeliveryPostalCode, PostalAddressLine1, PostalPostalCode, LastEditedBy)
SELECT v.Name, 1 [SupplierCategoryID], 1 [PrimaryContactPersonID], 1 [AlternateContactPersonID], 1 [DeliveryMethodID], 1 [DeliveryCityID],
1 [PostalCityID], 0 [PaymentDays], v.AccountNumber [BankAccountNumber], '' [PhoneNumber], '' [FaxNumber], '' [WebsiteURL], '' [DeliveryAddressLine1],
'' [DeliveryPostalCode], '' [PostalAddressLine1], '' [PostalPostalCode], 1 [LastEditedBy]
FROM AdventureWorks2019.Purchasing.Vendor v
WHERE NOT EXISTS (SELECT * FROM WideWorldImporters.Purchasing.Suppliers s WHERE s.SupplierName = v.Name COLLATE SQL_Latin1_General_CP1_CI_AS)
```

100 %

Messages

```
(102 rows affected)

Completion time: 2021-09-22T16:35:37.4707584-04:00
```



```
SELECT * FROM Purchasing.Suppliers
```

100 %

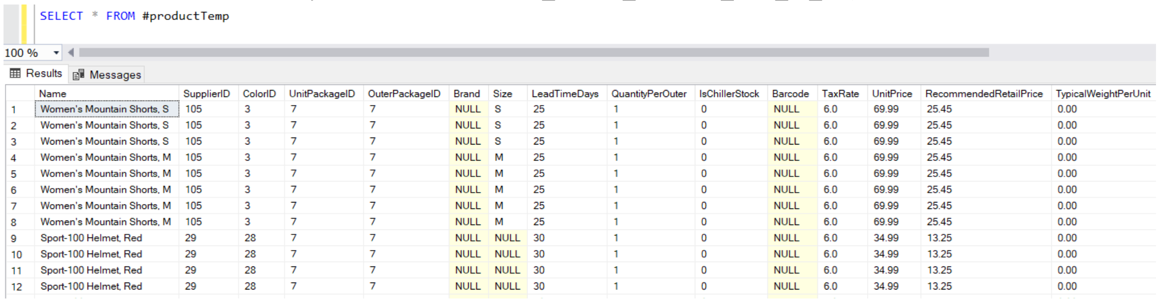
Results | Spatial results | Messages

	SupplierID	SupplierName	SupplierCategoryID	PrimaryContactPersonID	AlternateContactPersonID	DeliveryMethodID	DeliveryCityID	PostalCityID	SupplierReference	BankAccountName	BankAccountBranch
1	1	A Datum Corporation	2	21	22	7	38171	38171	AA20384	A Datum Corporation	Woodgrove Bank Zionsville
2	2	Contoso, Ltd.	2	23	24	9	13870	13870	B2084020	Contoso Ltd	Woodgrove Bank Greenbank
3	3	Consolidated Messenger	6	25	26	NULL	30378	30378	209340283	Consolidated Messenger	Woodgrove Bank San Francisco
4	4	Fabrikam, Inc.	4	27	28	7	18557	18557	293092	Fabrikam Inc	Woodgrove Bank Lakeview Heights
5	5	Graphic Design Institute	2	29	30	10	18634	18634	08803922	Graphic Design Institute	Woodgrove Bank Lanagan
6	6	Humongous Insurance	9	31	32	NULL	18656	18656	082420938	Humongous Insurance	Woodgrove Bank Lancing
7	7	Litware, Inc.	5	33	34	2	22602	22602	BC0280982	Litware Inc	Woodgrove Bank Mokelumne Hill
8	8	Lucerne Publishing	2	35	36	10	17161	17161	JQ082304802	Lucerne Publishing	Woodgrove Bank Jonesborough
9	9	Nod Publishers	2	37	38	10	10346	10346	GL08029802	Nod Publishers	Woodgrove Bank Elizabeth City
10	10	Northwind Electric Cars	3	39	40	8	7899	7899	ML0300202	Northwind Electric Cars	Woodgrove Bank Crandon Lakes
11	11	Trey Research	8	41	42	NULL	17277	17277	082304822	Trey Research	Woodgrove Bank Kadoka
12	12	The Phone Company	2	43	44	7	17346	17346	237408032	The Phone Company	Woodgrove Bank Karlstad
13	13	Woodgrove Bank	7	45	46	NULL	30378	30378	028034202	Woodgrove Bank	Woodgrove Bank San Francisco
14	15	Australia Bike Retailer	1	1	1	1	1	1	NULL	NULL	NULL
15	16	Allenson Cycles	1	1	1	1	1	1	NULL	NULL	NULL
16	17	Advanced Bicycles	1	1	1	1	1	1	NULL	NULL	NULL

Moving product information:

SELECT p.Name, s.SupplierID [SupplierID], c.ColorID [ColorID], 7 [UnitPackageID], 7 [OuterPackageID], NULL [Brand], p.Size [Size],
pv.AverageLeadTime [LeadTimeDays], 1 [QuantityPerOuter], 0 [IsChillerStock], NULL [Barcode], 6.0 [TaxRate], p.ListPrice [UnitPrice],
pv.StandardPrice [RecommendedRetailPrice], ISNULL(p.Weight,0) [TypicalWeightPerUnit], pd.Description [MarketingComments], pd.Description [InternalComments],
pp.LargePhoto [Photo], NULL [CustomFields], 1 [LastEditedBy], ROW_NUMBER() OVER(PARTITION BY p.ProductID ORDER BY p.Name) [Row]
INTO #productTemp
FROM AdventureWorks2019.Production.Product p
JOIN AdventureWorks2019.Purchasing.ProductVendor pv
ON p.ProductID = pv.ProductID
JOIN AdventureWorks2019.Purchasing.Vendor v
ON pv.BusinessEntityID = v.BusinessEntityID
JOIN WideWorldImporters.Purchasing.Suppliers s
ON v.Name = s.SupplierName COLLATE SQL_Latin1_General_CP1_CI_AS
JOIN AdventureWorks2019.Production.ProductModel pm
ON p.ProductModelID = pm.ProductModelID
JOIN AdventureWorks2019.Production.ProductModelProductDescriptionCulture pmpdc
ON pm.ProductModelID = pmpdc.ProductModelID
JOIN AdventureWorks2019.Production.ProductDescription pd
ON pmpdc.ProductDescriptionID = pd.ProductDescriptionID
JOIN AdventureWorks2019.Production.ProductProductPhoto ppp
ON p.ProductID = ppp.ProductID
JOIN AdventureWorks2019.Production.ProductPhoto pp
ON ppp.ProductPhotoID = pp.ProductPhotoID
JOIN WideWorldImporters.Warehouse.Colors c
ON p.Color = c.ColorName COLLATE SQL_Latin1_General_CP1_CI_AS

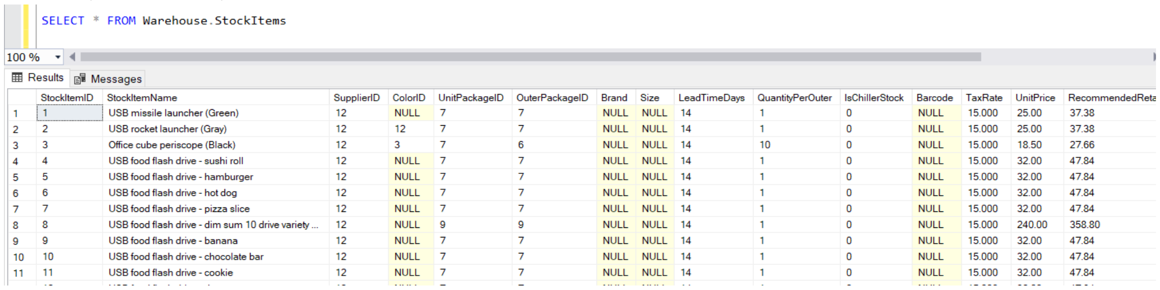
```
WHERE NOT EXISTS
(SELECT * FROM WideWorldImporters.Warehouse.StockItems si
WHERE si.StockItemName = p.Name COLLATE SQL_Latin1_General_CP1_CI_AS)
```



```
SELECT * FROM #productTemp
```

	Name	SupplierID	ColorID	UnitPackageID	OuterPackageID	Brand	Size	LeadTimeDays	QuantityPerOuter	IsChillerStock	Barcode	TaxRate	UnitPrice	RecommendedRetailPrice	TypicalWeightPerUnit
1	Women's Mountain Shorts, S	105	3	7	7	NULL	S	25	1	0	NULL	6.0	69.99	25.45	0.00
2	Women's Mountain Shorts, S	105	3	7	7	NULL	S	25	1	0	NULL	6.0	69.99	25.45	0.00
3	Women's Mountain Shorts, S	105	3	7	7	NULL	S	25	1	0	NULL	6.0	69.99	25.45	0.00
4	Women's Mountain Shorts, M	105	3	7	7	NULL	M	25	1	0	NULL	6.0	69.99	25.45	0.00
5	Women's Mountain Shorts, M	105	3	7	7	NULL	M	25	1	0	NULL	6.0	69.99	25.45	0.00
6	Women's Mountain Shorts, M	105	3	7	7	NULL	M	25	1	0	NULL	6.0	69.99	25.45	0.00
7	Women's Mountain Shorts, M	105	3	7	7	NULL	M	25	1	0	NULL	6.0	69.99	25.45	0.00
8	Women's Mountain Shorts, M	105	3	7	7	NULL	M	25	1	0	NULL	6.0	69.99	25.45	0.00
9	Sport-100 Helmet, Red	29	28	7	7	NULL	NULL	30	1	0	NULL	6.0	34.99	13.25	0.00
10	Sport-100 Helmet, Red	29	28	7	7	NULL	NULL	30	1	0	NULL	6.0	34.99	13.25	0.00
11	Sport-100 Helmet, Red	29	28	7	7	NULL	NULL	30	1	0	NULL	6.0	34.99	13.25	0.00
12	Sport-100 Helmet, Red	29	28	7	7	NULL	NULL	30	1	0	NULL	6.0	34.99	13.25	0.00

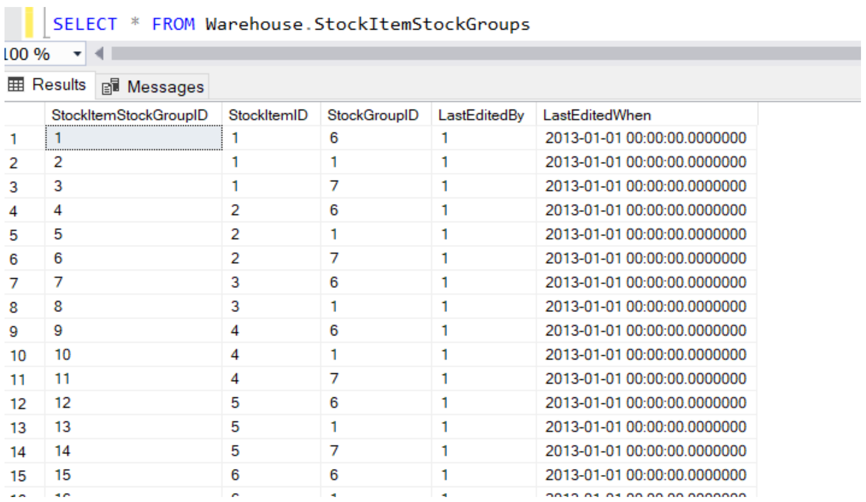
```
INSERT INTO WideWorldImporters.Warehouse.StockItems(StockItemName, SupplierID, ColorID,
UnitPackageID, OuterPackageID, Brand, Size, LeadTimeDays,
QuantityPerOuter, IsChillerStock, Barcode, TaxRate, UnitPrice, RecommendedRetailPrice,
TypicalWeightPerUnit, MarketingComments, InternalComments,
Photo, CustomFields, LastEditedBy)
SELECT Name+CAST(Row AS nvarchar(10)) [StockItemName], SupplierID, ColorID, UnitPackageID,
OuterPackageID, Brand, Size, LeadTimeDays,
QuantityPerOuter, IsChillerStock, Barcode, TaxRate, UnitPrice, RecommendedRetailPrice,
TypicalWeightPerUnit, MarketingComments, InternalComments,
Photo, CustomFields, LastEditedBy
FROM #productTemp
```



```
SELECT * FROM Warehouse.StockItems
```

	StockItemID	StockItemName	SupplierID	ColorID	UnitPackageID	OuterPackageID	Brand	Size	LeadTimeDays	QuantityPerOuter	IsChillerStock	Barcode	TaxRate	UnitPrice	RecommendedReta
1	1	USB missile launcher (Green)	12	NULL	7	7	NULL	NULL	14	1	0	NULL	15.000	25.00	37.38
2	2	USB rocket launcher (Gray)	12	12	7	7	NULL	NULL	14	1	0	NULL	15.000	25.00	37.38
3	3	Office cube periscope (Black)	12	3	7	6	NULL	NULL	14	10	0	NULL	15.000	18.50	27.66
4	4	USB food flash drive - sushi roll	12	NULL	7	7	NULL	NULL	14	1	0	NULL	15.000	32.00	47.84
5	5	USB food flash drive - hamburger	12	NULL	7	7	NULL	NULL	14	1	0	NULL	15.000	32.00	47.84
6	6	USB food flash drive - hot dog	12	NULL	7	7	NULL	NULL	14	1	0	NULL	15.000	32.00	47.84
7	7	USB food flash drive - pizza slice	12	NULL	7	7	NULL	NULL	14	1	0	NULL	15.000	32.00	47.84
8	8	USB food flash drive - dim sum 10 drive variety ...	12	NULL	9	9	NULL	NULL	14	1	0	NULL	15.000	240.00	358.80
9	9	USB food flash drive - banana	12	NULL	7	7	NULL	NULL	14	1	0	NULL	15.000	32.00	47.84
10	10	USB food flash drive - chocolate bar	12	NULL	7	7	NULL	NULL	14	1	0	NULL	15.000	32.00	47.84
11	11	USB food flash drive - cookie	12	NULL	7	7	NULL	NULL	14	1	0	NULL	15.000	32.00	47.84

```
INSERT INTO WideWorldImporters.Warehouse.StockItemStockGroups(StockItemID, StockGroupID,
LastEditedBy)
SELECT si.StockItemID, ps.ProductCategoryID [StockGroupID], 1 [LastEditedBy]
FROM AdventureWorks2019.Production.Product p JOIN
AdventureWorks2019.Production.ProductSubcategory ps ON p.ProductSubcategoryID =
ps.ProductSubcategoryID
JOIN #productTemp pt
ON p.Name = pt.Name
JOIN WideWorldImporters.Warehouse.StockItems si
ON pt.Name+CAST(pt.Row AS nvarchar(10)) = si.StockItemName COLLATE SQL_Latin1_General_CP1_CI_AS
```



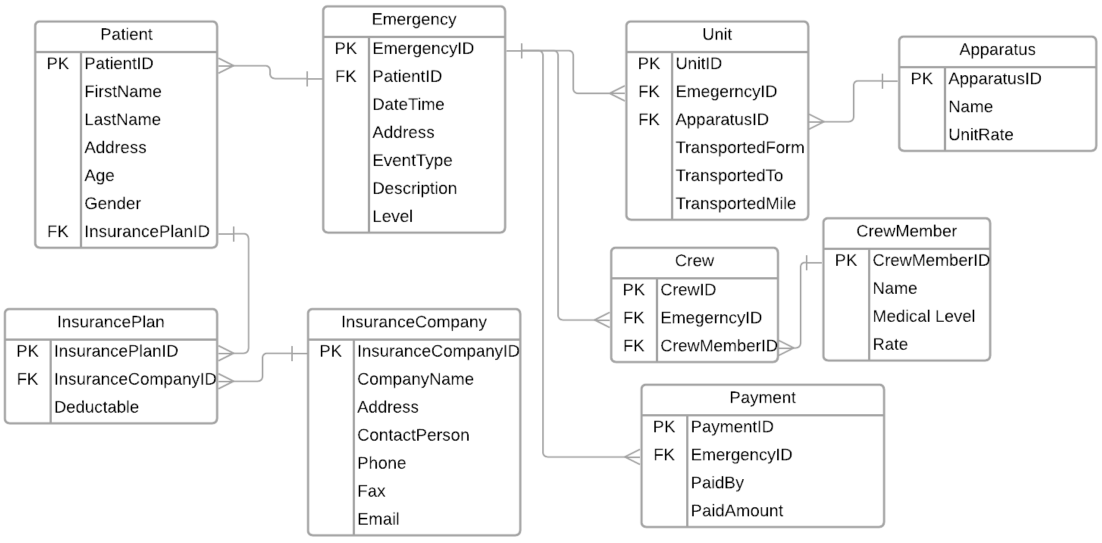
```sql
SELECT * FROM Warehouse.StockItemStockGroups
```

100 %

Results | Messages

	StockItemStockGroupID	StockItemID	StockGroupID	LastEditedBy	LastEditedWhen
1	1	1	6	1	2013-01-01 00:00:00.0000000
2	2	1	1	1	2013-01-01 00:00:00.0000000
3	3	1	7	1	2013-01-01 00:00:00.0000000
4	4	2	6	1	2013-01-01 00:00:00.0000000
5	5	2	1	1	2013-01-01 00:00:00.0000000
6	6	2	7	1	2013-01-01 00:00:00.0000000
7	7	3	6	1	2013-01-01 00:00:00.0000000
8	8	3	1	1	2013-01-01 00:00:00.0000000
9	9	4	6	1	2013-01-01 00:00:00.0000000
10	10	4	1	1	2013-01-01 00:00:00.0000000
11	11	4	7	1	2013-01-01 00:00:00.0000000
12	12	5	6	1	2013-01-01 00:00:00.0000000
13	13	5	1	1	2013-01-01 00:00:00.0000000
14	14	5	7	1	2013-01-01 00:00:00.0000000
15	15	6	6	1	2013-01-01 00:00:00.0000000

31. Database Design: OLTP db design request for EMS business: when people call 911 for medical emergency, 911 will dispatch UNITs to the given address. A UNIT means a crew on an apparatus (Fire Engine, Ambulance, Medic Ambulance, Helicopter, EMS supervisor). A crew member would have a medical level (EMR, EMT, A-EMT, Medic). All the treatments provided on scene are free. If the patient needs to be transported, that's where the bill comes in. A bill consists of Units dispatched (Fire Engine and EMS Supervisor are free), crew members provided care (EMRs and EMTs are free), Transported miles from the scene to the hospital (Helicopters have a much higher rate, as you can image) and tax (Tax rate is 6%). Bill should be sent to the patient insurance company first. If there is a deductible, we send the unpaid bill to the patient only. Don't forget about patient information, medical nature and bill paying status.



32. Remember the discussion about those two databases from the class, also remember, those data models are not perfect. You can always add new columns (but not alter or drop columns) to any tables. Suggesting adding Ingested DateTime and Surrogate Key columns. Study the Wide World Importers DW. Think the integration schema is the ODS. Come up with a TSQL Stored Procedure driven solution to move the data from WWI database to ODS, and then from the ODS to the fact tables and dimension tables. By the way, WWI DW is a galaxy schema db. Requirements:
    a. Luckly, we only start with 1 fact: Order. Other facts can be ignored for now.
    b. Add a new dimension: Country of Manufacture. It should be given on top of Stock Items.
    c. Write script(s) and stored procedure(s) for the entire ETL from WWI db to DW.

```
CREATE Procedure wwietl

AS

INSERT INTO [WideWorldImportersDW].[Integration].[Order_Staging]

SELECT NEWID(),ingestion_time(), dwcit.[City Key] , dwcu.[customer key], dwsi.[stock item key],
o.OrderDate, o.ExpectedDeliveryDate,

 dwemp.[Employee Key] , PickedByPersonID,dwcu.[Customer Key] , o.OrderID, o.BackorderOrderID,
orl.Description, packt.PackageTypeName,

orl.Quantity,        orl.UnitPrice, orl.TaxRate, (orl.Quantity * orl.UnitPrice)*(1-orl.TaxRate/100) as
totalexcludingtax, (orl.Quantity * orl.UnitPrice) * (orl.TaxRate/100) as taxamount,

(orl.Quantity * orl.UnitPrice)  as totalincludingtax, dwpurchase.[Lineage Key], dwcit.[City Key],
cu.CustomerID, orl.StockItemID, o.LastEditedWhen


FROM [WideWorldImporters].[Sales].[OrderLines] orl
JOIN       [WideWorldImporters].[Sales].[Orders] o
ON orl.OrderID = o.OrderID
JOIN [WideWorldImporters].[Sales].[Customers] c
ON o.CustomerID = c.CustomerID
JOIN [WideWorldImporters].[Application].[Cities] cit
ON c.DeliveryCityID = cit.CityID
JOIN [WideWorldImporters].[Application].[StateProvinces] statee
ON statee.StateProvinceID = cit.StateProvinceID
JOIN [WideWorldImporters].[Application].[Countries] count
ON count.CountryID = statee.CountryID
JOIN [WideWorldImportersDW].[Dimension].[Customer] dwcu
ON dwcu.[WWI Customer ID] = c.CustomerID
JOIN [WideWorldImporters].[Sales].[Invoices] inv
```

```
ON inv.CustomerID = c.CustomerID
JOIN [WideWorldImportersDW].[Fact].[Sale] dwfs
ON dwfs.[WWI Invoice ID]  = inv.InvoiceID
JOIN  [WideWorldImportersDW].[Dimension].[City] dwcit
ON dwcit.[WWI City ID] = cit.CityID
JOIN [WideWorldImportersDW].[Dimension].[Stock Item] dwsi
ON dwsi.[WWI Stock Item ID] = orl.StockItemID
JOIN  [WideWorldImportersDW].[Fact].[Purchase] dwpurchase
ON dwpurchase.[WWI Purchase Order ID]  = o.OrderID
JOIN [WideWorldImportersDW].[Dimension].[Employee] dwemp
ON dwemp.[WWI Employee ID] =  o.SalespersonPersonID
JOIN [WideWorldImportersDW].[Dimension].[Customer] dwcu2
ON o.PickedByPersonID = dwcu2.[Customer Key]
JOIN WideWorldImporters].[Warehouse].[PackageTypes] packt
ON packt.PackageTypeID = orl.PackageTypeID;


INSERT INTO [WideWorldImportersDW].[Fact].[Order]
SELECT [City Key],[Customer Key],[Stock Item Key],
                    [Order Date Key],[Picked Date Key],[Salesperson Key],
                    [Picker Key],[WWI Order ID],[WWI Backorder ID],[Description],
                    [Package],[Quantity],[Unit Price],[Tax Rate],[Total Excluding Tax],
                    [Tax Amount],[Total Including Tax],[Lineage Key]

FROM [WideWorldImportersDW].[Integration].[Order_Staging] ;



CREATE TABLE [WideWorldImportersDW].[Dimension].[CountryOfManufacture](
StockItemID int not null PRIMARY KEY,
StockItemName nvarchar(100),
CountryOfManufacture nvarchar(max) NULL
);

WITH table1 AS(
SELECT si.StockItemID , si.StockItemName ,JSON_VALUE(si.CustomFields,'$.CountryOfManufacture') as
CountryOfManufacture
FROM [WideWorldImporters].[Warehouse].[StockItems] si

)

INSERT INTO [WideWorldImportersDW].[Dimension].[CountryOfManufacture]
SELECT * FROM table1 ;

GO
```