

SQL Assignments

SQL related assignments will be on the Wide World Importers Database unless otherwise mentioned.

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).

	FullName	PhoneNumber	FaxNumber	company_phone	company_fax
1	Crisa Gireau	(308) 555-0100	(308) 555-0101	(308) 555-0100	(308) 555-0101
2	Abhoy Prabhupada	(423) 555-0100	(423) 555-0101	(423) 555-0100	(423) 555-0101
3	Thanh Dinh	(218) 555-0104	(218) 555-0108	(217) 555-0100	(217) 555-0101
4	Prem Prabh	(423) 555-0102	(423) 555-0108	(239) 555-0100	(239) 555-0101
5	Sara Karlsson	(201) 555-0100	(201) 555-0106	(252) 555-0100	(252) 555-0101
6	Thanh Dinh	(218) 555-0104	(218) 555-0108	(205) 555-0100	(205) 555-0101
7	Javiera Madera	(231) 555-0100	(231) 555-0101	(231) 555-0100	(231) 555-0101
8	Hanna Mihhalov	(360) 555-0100	(360) 555-0101	(276) 555-0100	(276) 555-0101
9	Vilma Niva	(209) 555-0103	(209) 555-0106	(225) 555-0100	(225) 555-0101
10	Paulus Lippmaa	(360) 555-0100	(360) 555-0101	(787) 555-0100	(787) 555-0101
11	Joel Cantilo	(405) 555-0100	(405) 555-0101	(405) 555-0100	(405) 555-0101
12	Madelaine Cartier	(423) 555-0101	(423) 555-0100	(228) 555-0100	(228) 555-0101
13	GokCe Karaca	(603) 555-0100	(603) 555-0101	(603) 555-0100	(603) 555-0101
14	Chandra Mittal	(304) 555-0100	(304) 555-0101	(304) 555-0100	(304) 555-0101
15	Hai Dam	(218) 555-0101	(218) 555-0108	(802) 555-0100	(802) 555-0101
16	Ema Slosar	(215) 555-0100	(215) 555-0101	(215) 555-0100	(215) 555-0101
17	Sharon Graham	(605) 555-0106	(605) 555-0101	(215) 555-0100	(215) 555-0101
18	Crisa Nechita	(217) 555-0100	(217) 555-0101	(217) 555-0100	(217) 555-0101
19	Philippe Lamy	(210) 555-0100	(210) 555-0101	(210) 555-0100	(210) 555-0101

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

	CustomerName
1	Tailspin Toys (Head Office)
2	Tailspin Toys (Sylvanite, MT)
3	Tailspin Toys (Peoples Valley, AZ)
4	Tailspin Toys (Medicine Lodge, KS)
5	Tailspin Toys (Gasport, NY)
6	Tailspin Toys (Jessie, ND)
7	Tailspin Toys (Frankewing, TN)
8	Tailspin Toys (Bow Mar, CO)
9	Tailspin Toys (Netcong, NJ)
10	Tailspin Toys (Wimbleton, ND)
11	Tailspin Toys (Devault, PA)
12	Tailspin Toys (Biscay, MN)
13	Tailspin Toys (Stonefort, IL)
14	Tailspin Toys (Long Meadow, MD)
15	Tailspin Toys (Batson, TX)
16	Tailspin Toys (Coney Island, MO)
17	Tailspin Toys (East Fultonham, OH)
18	Tailspin Toys (Goffstown, NH)
19	Tailspin Toys (Lemeta, AK)

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

	customerID
1	524
2	124
3	473
4	1004
5	547
6	936
7	515
8	942
9	1015
10	43
11	872
12	417
13	419
14	423
15	170
16	23
17	519
18	575
19	428

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

	StockItemID	total_quantity
1	1	88
2	2	83
3	3	15
4	4	104
5	5	99
6	6	98
7	7	102
8	8	204
9	9	96
10	10	111
11	11	102
12	12	101
13	13	99
14	14	97
15	15	196
16	16	28
17	17	33
18	18	46
19	19	36

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

	StockItemID
1	23
2	46
3	215
4	69
5	192
6	92
7	115
8	138
9	209
10	161
11	29
12	169
13	175
14	221
15	75
16	201
17	132
18	181
19	9

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

	StockItemID
1	18
2	33
3	43
4	93
5	143
6	86
7	118
8	136
9	204
10	211
11	68
12	138
13	186
14	187
15	153
16	154
17	36
18	53
19	19

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

	StateProvinceName	avg_day
1	Alabama	5
2	Alaska	5
3	Arizona	6
4	Arkansas	4
5	California	5
6	Colorado	4
7	Connecticut	4
8	Florida	4
9	Georgia	3
10	Hawaii	4
11	Idaho	5
12	Illinois	4
13	Indiana	7
14	Iowa	4
15	Kansas	4
16	Kentucky	3
17	Louisiana	5
18	Maine	4
19	Maryland	4

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

	StateProvinceName	month	avg_day
1	Alabama	1	10
2	Alabama	2	2
3	Alabama	3	3
4	Alabama	4	4
5	Alabama	5	3
6	Alabama	6	2
7	Alabama	7	11
8	Alabama	8	1
9	Alabama	9	3
10	Alabama	10	5
11	Alabama	11	11
12	Alabama	12	5
13	Alaska	1	1
14	Alaska	2	1
15	Alaska	3	1
16	Alaska	4	2
17	Alaska	5	5
18	Alaska	6	4
19	Alaska	7	4

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

	StockItemID	quantity
1	204	5640446.000
2	86	7953672.000
3	98	8113353.000
4	184	6169475.000
5	77	7741524.000
6	78	7974468.000
7	95	3893580.000
8	80	3806508.000
9	193	11818080.000

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.

	CustomerName	PhoneNumber	Primary_Contact_Person
1	Tailspin Toys (Hellwood, PA)	(215) 555-0100	Aahlada Thota
2	Tailspin Toys (Victory Gardens, NJ)	(201) 555-0100	Aakasha Nookala
3	Wingtip Toys (Smoot, WY)	(307) 555-0100	Aakriti Bhamidipati
4	Aakriti Byrraju	(216) 555-0100	Aakriti Byrraju
5	Wingtip Toys (Baldwin City, KS)	(316) 555-0100	Aamdaal Kamasamudram
6	Abel Spirlea	(218) 555-0100	Abel Spirlea
7	Abel Tatarescu	(217) 555-0100	Abel Tatarescu
8	Wingtip Toys (Lexington Heights, MI)	(231) 555-0100	Abhaya Rambhatla
9	Tailspin Toys (Fairfield Glade, TN)	(423) 555-0100	Abhoy Prabhupada
10	Abhira Ganguly	(212) 555-0100	Abhira Ganguly
11	Wingtip Toys (Bell Acres, PA)	(215) 555-0100	Abhira Thakur
12	Tailspin Toys (Oniole Beach, FL)	(239) 555-0100	Adam Dvorak
13	Tailspin Toys (East Fultonham, OH)	(216) 555-0100	Adam Kubat
14	Wingtip Toys (Balko, OK)	(405) 555-0100	Adirake Saenamuang
15	Adrian Andreasson	(217) 555-0100	Adrian Andreasson
16	Wingtip Toys (Harkers Island, NC)	(252) 555-0100	Adriana Horackova
17	Adriana Pena	(252) 555-0100	Adriana Pena
18	Tailspin Toys (Amanda Park, WA)	(206) 555-0100	Adrijana Blagojevic
19	Tailspin Toys (South Laguna, CA)	(209) 555-0100	Ae-Cha Joo

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

	CityName
1	Abanda
2	Abbeville
3	Abbotsford
4	Abott
5	Abbott
6	Aberdeen
7	Aberfoil
8	Abernant
9	Abeytas
10	Abiquiu
11	Abo
12	Abrams
13	Acampo
14	Acme
15	Acme
16	Aconita
17	Action
18	Ada
19	Adair Village

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.

	StockItemID	Description	DeliveryInstructions	CityName	StateProvinceName	CountryName	ContactPersonID	PhoneNumber	Quantity
1	2	USB rocket launcher (Gray)	Suite 24, 1345 Jun Avenue	Glenwillow	Ohio	United States	3032	(216) 555-0100	3
2	99	"The Gu" red shirt XML tag t-shirt (Black) 5XL	Suite 24, 1345 Jun Avenue	Glenwillow	Ohio	United States	3032	(216) 555-0100	24
3	66	RC big wheel monster truck with remote control (Bla...	Suite 24, 1345 Jun Avenue	Glenwillow	Ohio	United States	3032	(216) 555-0100	6
4	189	Clear packaging tape 48mmx75m	Unit 212, 1837 Vasiljevic Boulevard	Rose Tree	Pennsylvania	United States	2027	(215) 555-0100	260
5	42	Developer joke mug - understanding recursion requi...	Unit 212, 1837 Vasiljevic Boulevard	Rose Tree	Pennsylvania	United States	2027	(215) 555-0100	7
6	219	Void fill 400 L bag (White) 400L	Unit 212, 1837 Vasiljevic Boulevard	Rose Tree	Pennsylvania	United States	2027	(215) 555-0100	50
7	160	20 mm Double sided bubble wrap 20m	Unit 212, 1837 Vasiljevic Boulevard	Rose Tree	Pennsylvania	United States	2027	(215) 555-0100	80
8	124	Ogre battery-powered slippers (Green) L	Unit 18, 469 Valbe Road	Golden Meadow	Louisiana	United States	3110	(225) 555-0100	3
9	28	DBA joke mug - two types of DBAs (White)	Unit 18, 469 Valbe Road	Golden Meadow	Louisiana	United States	3110	(225) 555-0100	3
10	191	Black and orange fragile despatch tape 48mmx75m	Unit 18, 469 Valbe Road	Golden Meadow	Louisiana	United States	3110	(225) 555-0100	324
11	113	Superhero action jacket (Blue) XL	Unit 18, 469 Valbe Road	Golden Meadow	Louisiana	United States	3110	(225) 555-0100	10
12	11	USB food flash drive - cookie	Shop 104, 1889 Sminov Road	Sans Souci	South Carolina	United States	1183	(803) 555-0100	10
13	37	Developer joke mug - when your hammer is C++ (Bl...	Shop 104, 1889 Sminov Road	Sans Souci	South Carolina	United States	1183	(803) 555-0100	9
14	61	RC toy sedan car with remote control (Green) 1/50 ...	Shop 104, 1889 Sminov Road	Sans Souci	South Carolina	United States	1183	(803) 555-0100	8
15	108	Superhero action jacket (Blue) XXS	Shop 104, 1889 Sminov Road	Sans Souci	South Carolina	United States	1183	(803) 555-0100	5
16	142	Halloween zombie mask (Light Brown) S	Unit 193, 583 Alut Road	Rosa Sánchez	Puerto Rico (US Territory)	United States	2061	(787) 555-0100	96
17	33	Developer joke mug - that's a hardware problem (Bl...	Unit 193, 583 Alut Road	Rosa Sánchez	Puerto Rico (US Territory)	United States	2061	(787) 555-0100	7
18	212	Large replacement blades 18mm	Unit 193, 583 Alut Road	Rosa Sánchez	Puerto Rico (US Territory)	United States	2061	(787) 555-0100	10
19	141	Funny animal socks (Pink) XL	Unit 193, 583 Alut Road	Rosa Sánchez	Puerto Rico (US Territory)	United States	2061	(787) 555-0100	96

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

	StockGroupID	total_quantity_purchased	total_quantity_sold	total_remaining_stock_quantity
1	1	13127655.000	-1160318.000	14285973.000
2	2	99895376.000	-2624358.000	106613734.000
3	3	3063478.000	-244036.000	3327514.000
4	4	94324680.000	-1581499.000	9590579.000
5	6	101031408.000	-1962761.000	102994169.000
6	7	3370510.000	-81066.000	3451576.000
7	8	2609444.000	-385858.000	3005302.000
8	9	2661948.000	-121363.000	2783311.000
9	10	62724805.000	-5696362.000	68421167.000

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".

	CityName	MostDelivery
1	Abbotsburg	USB food flash drive - banana
2	Abbotsburg	DBA joke mug - you might be a DBA f (White)
3	Abbotsburg	Superhero action jacket (Blue) 5XL
4	Abbotsburg	32 mm Double sided bubble wrap 10m
5	Abbotsburg	10 mm Double sided bubble wrap 10m
6	Abbotsburg	Ride on toy sedan car (Pink) 1/12 scale
7	Abbotsburg	Ogre battery-powered slippers (Green) M
8	Absecon	Superhero action jacket (Blue) 3XS
9	Absecon	Ride on toy sedan car (Pink) 1/12 scale
10	Absecon	IT joke mug - hardware: part of the computer that ...
11	Accomac	Developer joke mug - fun was unexpected at this ...
12	Acetunas	USB missile launcher (Green)
13	Airport Drive	"The Gu" red shirt XML tag t-shirt (White) S
14	Airport Drive	32 mm Anti static bubble wrap (Blue) 50m
15	Airport Drive	32 mm Anti static bubble wrap (Blue) 10m
16	Alhlok	Black and yellow heavy despatch tape 48mmx75m
17	Alhlok	Shaping carton (Brown) 400x270x320mm
18	Alhlok	USB rocket launcher (Gray)
19	Alhlok	USB missile launcher (Green)

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

	OrderID
1	372
2	381
3	393
4	358
5	410
6	444
7	421
8	448
9	428
10	446
11	270
12	489
13	464
14	488
15	479
16	550
17	541
18	528
19	575

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

	StockItemID	StockItemName	CustomFields
1	1	USB missile launcher (Green)	("CountryOfManufacture": "China", "Tags": ["USB ...
2	2	USB rocket launcher (Gray)	("CountryOfManufacture": "China", "Tags": ["USB ...
3	3	Office cube periscope (Black)	("CountryOfManufacture": "China", "Tags": [])
4	16	DBA joke mug - mind if I join you? (White)	("CountryOfManufacture": "China", "Tags": ["Com...
5	17	DBA joke mug - mind if I join you? (Black)	("CountryOfManufacture": "China", "Tags": ["Com...
6	18	DBA joke mug - daaaaaa-ta (White)	("CountryOfManufacture": "China", "Tags": ["Com...
7	19	DBA joke mug - daaaaaa-ta (Black)	("CountryOfManufacture": "China", "Tags": ["Com...
8	20	DBA joke mug - you might be a DBA if (White)	("CountryOfManufacture": "China", "Tags": ["Com...
9	21	DBA joke mug - you might be a DBA if (Black)	("CountryOfManufacture": "China", "Tags": ["Com...
10	22	DBA joke mug - it depends (White)	("CountryOfManufacture": "China", "Tags": ["Com...
11	23	DBA joke mug - it depends (Black)	("CountryOfManufacture": "China", "Tags": ["Com...
12	24	DBA joke mug - I will get you in order (White)	("CountryOfManufacture": "China", "Tags": ["Com...
13	25	DBA joke mug - I will get you in order (Black)	("CountryOfManufacture": "China", "Tags": ["Com...
14	26	DBA joke mug - SELECT caffeine FROM mug (White)	("CountryOfManufacture": "China", "Tags": ["Com...
15	27	DBA joke mug - SELECT caffeine FROM mug (Black)	("CountryOfManufacture": "China", "Tags": ["Com...
16	28	DBA joke mug - two types of DBAs (White)	("CountryOfManufacture": "China", "Tags": ["Com...
17	29	DBA joke mug - two types of DBAs (Black)	("CountryOfManufacture": "China", "Tags": ["Com...
18	30	Developer joke mug - Oct 31 = Dec 25 (White)	("CountryOfManufacture": "China", "Tags": ["Com...
19	31	Developer joke mug - Oct 31 = Dec 25 (Black)	("CountryOfManufacture": "China", "Tags": ["Com...

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

	country	total_quantity
1	"China"	2717901
2	"Japan"	22365

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]

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]

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.

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.

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.
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.
24. Consider the JSON file:

```
{
  "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"
  }
]
}

```

Looks like that it is our missed purchase orders. Migrate these data into Stock Item, Purchase Order and Purchase Order Lines tables. Of course, save the script.

25. Revisit your answer in (19). Convert the result in JSON string and save it to the server using TSQL 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.
27. Create a new table called ods.ConfirmedDeviveryJson 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.
28. Write a short essay talking about your understanding of transactions, locks and isolation levels.

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.

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.
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.

```
SELECT * INTO person_info
FROM(
SELECT a.FirstName,a.LastName,b.PhoneNumber,c.EmailAddress,d.PasswordHash
FROM AdventureWorks2019.Person.Person a
left join AdventureWorks2019.Person.PersonPhone b
on a.BusinessEntityID = b.BusinessEntityID
left join AdventureWorks2019.Person.EmailAddress c
on a.BusinessEntityID =c.BusinessEntityID
left join AdventureWorks2019.Person.Password d
on a.BusinessEntityID = d.BusinessEntityID) AS tt
```

```
SELECT * INTO product_info
FROM(
SELECT a.color,b.ProductSubcategoryID
FROM AdventureWorks2019.Production.Product a
left join AdventureWorks2019.Production.ProductSubcategory b
```


on a.ProductSubcategoryID = b.ProductSubcategoryID) AS tb

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. Luckily, we only start with 1 fact: Purchase. 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.

