IS 475/675 HW#9

Each of the problems on this assignment requires you to create a set of SELECT statements (1 or more) to satisfy the request. Most of the questions are best answered with the use of a view or CTE. Some questions require the use of multiple views or CTEs.

Deliverables

Turn in two deliverables to WebCampus for this assignment: (1) A Word document containing the same output structure as that detailed on HW#7 and a (2) time sheet (one per member of a team if you are working as part of a team – there is a sample time sheet included at the end of this assignment). You must include your VIEW code in the deliverable you submit for grading. Since some of the views may be used for more than one question, I recommend putting all the VIEW code in a separate section on the Word document and clearly labeling the name of each view. It would be very helpful if you highlighted the names with color on your Word document to make it easier for me to find the code for your views.

Please include the name of the database on the first page of the Word document that should be used to test your code, if necessary.

There is no need to turn anything in on paper for this assignment.

FYI – this homework assignment is worth 90 points.

Here are some important points to remember about this database.

- It is possible to receive partial shipments. For example, let's say that MountainDesign ordered a quantity of 12 for a product. It is possible to receive 3 of those products on one receiver, 2 of the products on another receiver, and 7 of the products on a final receiver. That means there will be 3 different rows in the receiver table for that particular product on that given purchase order with a given date needed. **You must sum the quantity received in the receiver table to get an accurate amount of the number of products received in total for a given product on a given purchase order for a given date needed.**
- There are both "open" and "closed" purchase orders in this database. An "open" purchase order is an order that has not yet had all its required products fully received. A "closed" purchase order is an order that has had all its products fully received. A purchase order is considered "closed" even if there have been overshipments (too many products received) of products.
- An overshipment occurs when more products were received than were ordered. It is possible to have overshipments in this database. There is no flag field to show when an overshipment has occurred.
- It is possible to partially receive a given product for a given purchase order. For example, let's say that MountainDesign ordered a quantity of 50 for productID 'G0983.' It is possible to receive only 30 of the 50 products, leaving 20 on backorder. That order is still considered "open" because not all items were fully received. A purchase order where some, but not all, of a product have been received is referred to as a "partially received" order. A purchase order is NOT partially received if none of the products have been shipped. A partially received order is an open order.
- A purchase order where none of the products have been received is considered an "open" purchase order.
- Here is a summary of potential purchase order status conditions:

- Open: Products have not been received at all or have been partially received.
- Closed: Products have been fully received or have been overshipped.

- Here is a summary of potential product received conditions on a purchase order:
  - Not received: None of a particular product on a purchase order has been received.
  - Complete: All of a particular product on a purchase order has been fully received.
  - Partially Received: Some of a particular product on a purchase order has been received (also referred to as "partial shipment" in the assignment).
  - Over Received (also referred to as "Over Shipment" or "Received Too Many" in the assignment): More of a particular product has been received than was ordered.

Here are the 11 questions for HW#9

1. This question is a slight extension of question #10 on HW#8. The basic/core logic is the same – this question asks for some additional columns. Create a report listing the receiving status of each line of each purchase order. The receiving status is shown on the chart below.

Difference	Receiving Status
qtyordered – sum of quantity received = 0	Complete
qtyordered – sum of quantity received < 0	Over Shipped
qtyordered – sum of quantity received > 0	Partially Received
sum of quantity received = 0	Not Received

Include the columns as displayed on the sample result table. Sort the output by ponumber, productid, and dateneeded. I recommend using a SQL view to summarize the total quantity received from the receiver table by PONumber, ProductID and DateNeeded so that the main query does not have to use an aggregate function or GROUP BY. The first 21 rows of the result table are provided on the top of the next page. You must create and include the full result table on your deliverable to get full credit.

	PO Number	PO Date	Vendor Name	Employee Buyer	Manager of Buyer	Product ID	Product Description	Date Needed	Product Price	Quantity Ordered	Quantity Received	Quantity Remaining	Receiving Status
1	025974	Aug 15, 2019	Alcan Plastic, Inc.	Fetters, S.	Shamsudeen, M	M3577	Cot Mesh - Sturdy	Aug 18, 2019	4.63	600.00	600.00	0.00	Complete
2	025974	Aug 15, 2019	Alcan Plastic, Inc.	Fetters, S.	Shamsudeen, M	O1957	Poly pro tubing, 1/2"	Aug 18, 2019	0.46	300.00	310.00	-10.00	Over Shipped
3	045687	Aug 21, 2019	PolySort Manufacturing	Huang, H.	No Manager on File	C2399	Thermoplastic	Sep 05, 2019	2.99	40.00	51.00	-11.00	Over Shipped
4	045687	Aug 21, 2019	PolySort Manufacturing	Huang, H.	No Manager on File	L8500	Hiking Lounge Seating - Blue	Sep 10, 2019	29.64	15.00	0.00	15.00	Not Received
5	045687	Aug 21, 2019	PolySort Manufacturing	Huang, H.	No Manager on File	O1957	Poly pro tubing, 1/2"	Sep 12, 2019	0.29	450.00	440.00	10.00	Partially Received
6	056489	Aug 04, 2019	Injectomatic Mold Corp.	Huang, H.	No Manager on File	M3577	Cot Mesh - Sturdy	Aug 15, 2019	5.29	600.00	0.00	600.00	Not Received
7	112233	Sep 21, 2019	Albemarle Corporation	Nguyen, L.	Fetters, S	M3577	Cot Mesh - Sturdy	Oct 07, 2019	5.89	600.60	640.95	-40.35	Over Shipped
8	112233	Sep 21, 2019	Albemarle Corporation	Nguyen, L.	Fetters, S	P7844	Down Baffle Liner	Sep 24, 2019	1.50	500.25	475.25	25.00	Partially Received
9	234607	Sep 04, 2019	Albemarle Corporation	Huang, H.	No Manager on File	C2399	Thermoplastic	Sep 06, 2019	1.75	75.00	75.00	0.00	Complete
10	234607	Sep 04, 2019	Albemarle Corporation	Huang, H.	No Manager on File	G0983	Alpine Small Pot	Sep 08, 2019	1.50	200.00	200.00	0.00	Complete
11	234607	Sep 04, 2019	Albemarle Corporation	Huang, H.	No Manager on File	G1366	Alpine Pot/Kettle Insert	Sep 10, 2019	4.89	182.00	182.00	0.00	Complete
12	234607	Sep 04, 2019	Albemarle Corporation	Huang, H.	No Manager on File	G5698	Alpine Skillet Handle Set	Sep 19, 2019	1.22	182.00	182.00	0.00	Complete
13	234607	Sep 04, 2019	Albemarle Corporation	Huang, H.	No Manager on File	R5660	Water Filtration Pump	Sep 26, 2019	1.99	100.00	100.00	0.00	Complete
14	234607	Sep 04, 2019	Albemarle Corporation	Huang, H.	No Manager on File	T0460	Alpine Water Bottle	Sep 26, 2019	2.75	200.00	200.00	0.00	Complete
15	256887	Sep 19, 2019	Recycle Plastics Company	No Buyer on File	No Manager on File	C2399	Thermoplastic	Oct 15, 2019	2.50	20.00	20.00	0.00	Complete
16	256887	Sep 19, 2019	Recycle Plastics Company	No Buyer on File	No Manager on File	P5678	Stuff Sacks - Pillow Size	Oct 15, 2019	22.50	48.00	49.00	-1.00	Over Shipped
17	329987	Oct 10, 2019	Alcan Plastic, Inc.	Dabiri, D.	Nguyen, L	O1957	Poly pro tubing, 1/2"	Nov 15, 2019	0.41	300.00	0.00	300.00	Not Received
18	329987	Oct 10, 2019	Alcan Plastic, Inc.	Dabiri, D.	Nguyen, L	T0460	Alpine Water Bottle	Jan 12, 2020	3.10	50.00	0.00	50.00	Not Received
19	351211	Sep 09, 2019	BestCo Food Equipment	MacAndrews-...	Nguyen, L	B9812	Single Burner Alcohol Fueled	Nov 12, 2019	8.99	15.00	10.00	5.00	Partially Received
20	351211	Sep 09, 2019	BestCo Food Equipment	MacAndrews-...	Nguyen, L	B9812	Single Burner Alcohol Fueled	Jan 12, 2020	9.99	5.00	0.00	5.00	Not Received
21	351211	Sep 09, 2019	BestCo Food Equipment	MacAndrews-...	Nguyen, L	B9812	Single Burner Alcohol Fueled	Mar 08, 2020	9.99	5.00	0.00	5.00	Not Received

2. The output generated for question #1 provides detailed information about the receiving status of **each line** on each purchase order. Now it is time to evaluate the status of a whole purchase order. The purpose of this query is to create a report that provides information about those purchase orders where each purchase order line on the purchase order is either complete or overshipped – in other words, we want to look at the completed (**closed**) purchase orders. Include the PONumber, PODatePlaced, PODateNeeded, and name of the vendor in the result table. These purchase orders would be considered "closed" by Mountain Design. It is a bit difficult to determine whether an entire purchase order has been received but that is the basic logic you must work out for this query. You cannot sum up the total quantity ordered of all products on a purchase order and compare that to the total quantity received of all products on a purchase order – that will not solve the basic logic. Instead, you must figure out how to determine whether each individual line on a purchase order is complete. If even one line is not complete, then the purchase order is open. One way to do it is to create a view that contains the purchase order numbers of the purchase order lines that are open, and then use that view in the subquery to determine whether a purchase order number is in that query's result table, but there are many ways to solve this basic logic question. Here is the result table:

	PONumber	PODatePlaced	PODateNeeded	VendorName
1	025974	Aug 15, 2019	Aug 18, 2019	Alcan Plastic, Inc.
2	234607	Sep 04, 2019	Sep 28, 2019	Albemarle Corporation
3	256887	Sep 19, 2019	Oct 15, 2019	Recycle Plastics Company
4	600124	Oct 01, 2019	Dec 20, 2019	PolySort Manufacturing

3. Generating the same columns as that produced for question #2, make a report listing all the **open** purchase orders. An open order is any purchase order in the database that has not yet been completely received. The purchase order may have some purchase order lines that have been completely received, or have partial shipments, but not all purchase order lines have been fully received. Here is the result table:

	PONumber	PODatePlaced	PODateNeeded	VendorName
1	045687	Aug 21, 2019	Sep 12, 2019	PolySort Manufacturing
2	056489	Aug 04, 2019	Aug 15, 2019	Injectomatic Mold Corp.
3	112233	Sep 21, 2019	Oct 25, 2019	Albemarle Corporation
4	329987	Oct 10, 2019	Jan 12, 2020	Alcan Plastic, Inc.
5	351211	Sep 09, 2019	Mar 10, 2020	BestCo Food Equipment
6	365870	Sep 14, 2019	Mar 14, 2020	Albemarle Corporation
7	453313	Sep 19, 2019	Oct 05, 2019	Albemarle Corporation
8	543791	Sep 15, 2019	Jan 15, 2020	Celanette Design, LLC
9	661677	Sep 30, 2019	Nov 15, 2019	PolySort Manufacturing
10	781900	Oct 03, 2019	Nov 12, 2019	Apex Mills
11	902347	Sep 16, 2019	Oct 18, 2019	Apex Mills

4. Now we want to know more information about the purchase orders that are **closed** (determined in question #2). For each purchase order that is closed, we want to know the PONumber, PODatePlaced, PODateNeeded, Vendor name and also the product ID, the first date that anything was received for that product on that order, the last date that anything was received for that product on that order, the total quantity ordered for that product on that order and the total quantity received for that product. Here is the result table:

	PONumber	PODatePlaced	PODateNeeded	VendorName	Product ID	FirstDateReceived	LastDateReceived	Quantity Ordered	Quantity Received
1	025974	Aug 15, 2019	Aug 18, 2019	Alcan Plastic, Inc.	M3577	Aug 15, 2019	Aug 17, 2019	600.00	600.00
2	025974	Aug 15, 2019	Aug 18, 2019	Alcan Plastic, Inc.	O1957	Aug 15, 2019	Aug 17, 2019	300.00	310.00
3	234607	Sep 04, 2019	Sep 28, 2019	Albemarle Corporation	C2399	Sep 07, 2019	Sep 12, 2019	75.00	75.00
4	234607	Sep 04, 2019	Sep 28, 2019	Albemarle Corporation	G0983	Sep 07, 2019	Sep 07, 2019	200.00	200.00
5	234607	Sep 04, 2019	Sep 28, 2019	Albemarle Corporation	G1366	Sep 07, 2019	Sep 14, 2019	182.00	182.00
6	234607	Sep 04, 2019	Sep 28, 2019	Albemarle Corporation	G5698	Sep 22, 2019	Sep 22, 2019	182.00	182.00
7	234607	Sep 04, 2019	Sep 28, 2019	Albemarle Corporation	R5660	Sep 22, 2019	Sep 26, 2019	100.00	100.00
8	234607	Sep 04, 2019	Sep 28, 2019	Albemarle Corporation	T0460	Sep 22, 2019	Sep 22, 2019	200.00	200.00
9	256887	Sep 19, 2019	Oct 15, 2019	Recycle Plastics Company	C2399	Sep 26, 2019	Sep 26, 2019	20.00	20.00
10	256887	Sep 19, 2019	Oct 15, 2019	Recycle Plastics Company	P5678	Sep 23, 2019	Sep 25, 2019	48.00	49.00
11	600124	Oct 01, 2019	Dec 20, 2019	PolySort Manufacturing	G0983	Oct 15, 2019	Oct 16, 2019	100.00	110.00
12	600124	Oct 01, 2019	Dec 20, 2019	PolySort Manufacturing	G1366	Oct 28, 2019	Oct 28, 2019	150.00	150.00
13	600124	Oct 01, 2019	Dec 20, 2019	PolySort Manufacturing	G5698	Oct 14, 2019	Oct 17, 2019	100.00	100.00

5. New Question!! Which products currently on order (include all rows in the PurchaseOrderLine table even if the purchase order is closed) have a price that is 20% higher than the most current historical price for that product. The most current historical price is determined in question #15 from HW#8, so I recommend creating a view of that answer to facilitate answering this question. Include the ProductID, Product Description, most recent historical price, the current price for which the product is on order, the PONumber where a product is on order and the Vendor Name. It is possible that a product is on order on more than one purchase order. Include all purchase order lines where a product is currently on order. The result table is shown below.

	ProductID	ProductDescription	RecentHistoricalPrice	CurrentPrice	PONumber	VendorName
1	C2399	Thermoplastic	1.89	2.99	045687	PolySort Manufacturing
2	C2399	Thermoplastic	1.89	2.50	256887	Recycle Plastics Company
3	P7844	Down Baffle Liner	0.67	1.50	112233	Albemarle Corporation
4	T0460	Alpine Water Bottle	1.98	2.75	234607	Albemarle Corporation
5	T0460	Alpine Water Bottle	1.98	3.10	329987	Alcan Plastic, Inc.
6	T0460	Alpine Water Bottle	1.98	2.39	365870	Albemarle Corporation
7	T0460	Alpine Water Bottle	1.98	2.49	543791	Celanette Design, LLC

6. MountainDesign is tired of receiving over-shipments from vendors. Which Vendor overshipped the **most** purchase order line items? List the VendorID, Name, Email and a **count** of the number of purchase order line items overshipped (not a sum of overshipped items). Result table:

	vendor ID	vendor Name	vendor Email Address	Count of Over-Shipped Purchase Order Lines
1	00216	PolySort Manufacturing	fxd@polysort.com	2

7. MountainDesign wonders whether there might be fraud in the Receiving department. Which Employee received the **most** products that were damaged? List information about the employee, such as the EmployeeID, employee name, and employee email address. In addition, list the employeeID of the manager of that employee, the manager's name and the manager's email address. Use a max of the sum of the QtyReceived in the Receiver table to make the determination of the "most" received products. Assume that new ConditionID's may be created in the future, so make sure that your query uses the **description** of the damage (in the condition table) and not the ConditionID for the actual search in the "where" clause. In other words, use the word "damage" in the WHERE clause to do the search because there might be new types of "damage" for received products in the future. Here is the result table:

	EmployeeID	EmployeeName	empemail	Manager EmpID	Manager's Name	Manager's Email	Quantity of Damaged Items Received
1	E10101	Dabiri, D	DilDabiri@gmail.com	E10026	Nguyen, L	LNguyen@gmail.com	340.50

8. Create a listing of information about each product in the product table; there should be one row in the result table for each row in the product table. One of our products has two exact same date/time purchases in the purchasehistory table, so that product (J8006) will have two rows in the table. The columns should include: ProductID, Product Description, Product Type Description, Quantity currently on order in the PurchaseOrderLine table, the most expensive and least expensive prices in the PurchaseOrderLine table for the product and the average price in the PurchaseOrderLine table for the product. The information should also include historical data from the PurchaseHistory table including past most expensive, least expensive and average prices paid for a product as well as the most recent date a product was purchased in the past, and the price paid on that date. Here is the result table.

	Product ID	Product Description	Product Type Description	Total Qty Currently on Order	Current Most Expensive Price	Current Least Expensive Price	Current Average Price	Past Most Expensive Price	Past Least Expensive Price	Past Average Price	Most Recent Purchase Date	Most Recent Purchase Pri
1	A7879	Canvas, Non-Woven	Camping and Resting	0.00	0.00	0.00	0.00	0.12	0.07	0.0925	Mar 15, 2019	0.12
2	B9812	Single Burner Alcohol Fueled	Camping and Cooking	25.00	9.99	8.99	9.6566	0.00	0.00	0.00	No Previous Purchase	0.00
3	C2399	Thermoplastic	Camping and Resting	135.00	2.99	1.75	2.4133	2.15	1.45	1.8244	Aug 12, 2019	1.89
4	C8733	Nylon Cover	Camping and Resting	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No Previous Purchase	0.00
5	C9100	Unbleached Muslin	Camping and Resting	800.00	3.45	3.45	3.45	0.00	0.00	0.00	No Previous Purchase	0.00
6	G0983	Alpine Small Pot	Hiking and Trails	755.00	2.25	1.50	2.044	2.38	1.99	2.1466	Mar 12, 2019	2.15
7	G1258	Alpine Pot/Kettle Handle	Utility Materials	0.00	0.00	0.00	0.00	4.29	4.29	4.29	Jul 21, 2019	4.29
8	G1366	Alpine Pot/Kettle Insert	Utility Materials	380.00	4.89	1.89	3.8766	4.81	4.81	4.81	Jun 20, 2019	4.81
9	G5698	Alpine Skillet Handle Set	Utility Materials	342.00	2.38	1.22	1.855	2.21	2.16	2.185	Jun 20, 2019	2.21
10	J8006	Microfilter tubing	Miscellaneous	501.00	1.07	1.02	1.0366	1.10	0.99	1.045	Aug 12, 2019	1.10
11	J8006	Microfilter tubing	Miscellaneous	501.00	1.07	1.02	1.0366	1.10	0.99	1.045	Aug 12, 2019	0.99
12	L8500	Hiking Lounge Seating - Blue	Comfort Essentials	23.00	29.64	26.45	28.045	38.40	26.22	31.3566	Dec 12, 2018	26.22
13	L8501	Hiking Lounge Seating - Gray	Comfort Essentials	0.00	0.00	0.00	0.00	29.94	29.94	29.94	Dec 12, 2018	29.94
14	M2356	Cot Mesh - Ultralite	Miscellaneous	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No Previous Purchase	0.00
15	M3577	Cot Mesh - Sturdy	Miscellaneous	2550.60	5.89	4.63	5.34	6.35	4.85	5.7675	Jul 12, 2019	6.35
16	O1957	Poly pro tubing, 1/2"	Miscellaneous	1050.00	0.46	0.29	0.3866	0.65	0.41	0.4714	Jul 23, 2019	0.43
17	P5678	Stuff Sacks - Pillow Size	Travel Bags	48.00	22.50	22.50	22.50	24.66	23.51	24.085	Jun 12, 2019	23.51
18	P7844	Down Baffle Liner	Miscellaneous	500.25	1.50	1.50	1.50	0.67	0.67	0.67	Jul 12, 2019	0.67
19	R5660	Water Filtration Pump	Camping and Cooking	175.00	1.99	1.59	1.79	2.15	2.10	2.1233	Jun 18, 2019	2.10
20	T0460	Alpine Water Bottle	Camping and Cooking	1090.00	3.10	1.39	2.3228	1.98	1.12	1.62	Feb 19, 2019	1.98

9. Using the definitions for question #8, which product's current most expensive price (in the PurchaseOrderLine table) has the **largest** positive percentage increase in price from the **most recent** past purchase price (most recent past purchase in the PurchaseHistory table)? Calculate the percentage increase using this formula: ((current most expensive price – most recent past purchase price)/(most recent past purchase price)) * 100. Here is the result table:

	productid	ProductDescription	PONumber	PurchaseOrderDate	VendorName	CurrentMostExpensivePrice	MostRecentPastPurchasePrice	PriceDifference	PercentageIncrease
1	P7844	Down Baffle Liner	112233	2019-09-21 00:00:00.000	Albemarle Corporation	1.50	0.67	0.83	123.88%

10. New query! For which product type have we purchased the most products? Add both the products that are currently on order (represented by the data in tblPurchaseOrderLine) and products that were previously ordered (represented by data in tblPurchaseHistory). Include both the product with the "most" as determined by a max of the count of the products and the product that is the "most" as determined by a max of the sum of the qty of the products. I recommend using a UNION statement to combine the results of the queries into a single result table. Here is the result table:

	ProductTypeID	ProductTypeDescription	Total	TotalDescription
1	CR	Camping and Resting	40885.00	Sum of Quantity Ordered
2	MS	Miscellaneous	29.00	Count of Products Ordered

11. Write a stored procedure that copies all purchase orders in the PurchaseOrder table that are closed to a new table called "tblPOClosed." The stored procedure should also copy all the purchase order lines for closed purchase orders to a new table called "tblPOLineClosed". It is not necessary to maintain referential integrity on either of these tables. Add one new field in addition to all the fields in the "current" version to both tables for the "closed" version as shown below. In addition, add a new surrogate primary key field to the tblPOLineClosed table.

Normally, you would delete the rows from the PurchaseOrder and PurchaseOrderLine tables once you have copied them from the current tables to the "closed" tables. However, in order to preserve the integrity of your tables, **please do not delete** the rows once they have been copied to the new tables.

Table: tblPOClosed

Attribute Name	Data Type & Size	Primary Key	Foreign Key	Other Constraints
PoNumber	char(6)	Yes	no	
PODatePlaced	Datetime	No	no	
PODateNeeded	Datetime	No	no	
Terms	varchar(15)	No	no	
Conditions	varchar(15)	No	no	
BuyerEmpID	char(6)	No	no	
VendorID	char(5)	No	nor	
DateMoved	DateTime	no	no	This note is not a constraint - this is information..The value in this field should be the datetime when the row was added to the table.

Table: tblPOLineClosed

Attribute Name	Data Type & Size	Primary Key	Foreign Key	Other Constraints
POLID	int	yes	no	Make this an identity so that it serves as a surrogate primary key.
PONumber	char(6)	Yes	no	
ProductID	char(5)	Yes	no	
QtyOrdered	decimal(6,2)	No	No	
Price	money	No	No	
DateNeeded	datetime	Yes	No	
DateMoved	DateTime	no	no	This note is not a constraint - this is information..The value in this field should be the datetime when the row was added to the table.

Hints: The answer to question #2 determines which purchase orders are closed, so I recommend creating a view of that answer so it can be used to determine whether or not a purchase order is closed. I recommend using the INSERT INTO/SELECT statement to copy the data from the current table to the closed table. This is a very simple stored procedure – do not feel that you should make it more complicated than it seems.

IS 475/675 HW#9 Time Sheet

Name:

Date	Hours		Date	Hours

Total Time Spent =