Short Answer Questions

Answer the following questions with complete sentences in your own words. You are encouraged to conduct your own research online or through other methods before answering the questions. If you research online, please consult multiple sources before you write down your answers. You are expected to be able to explain your answers in detail.

1. What is an aggregate function? What are some examples of aggregate functions?
2. What are joins? What are the basic types of joins?
3. What is a sub-query?
4. What are set operators? How is it different from a join?
5. What are the differences between UNION and UNION ALL?
6. What are some rules you have to follow when you use set operators?
7. What are views? How is it different from a table? What happens if you modify data on view?
8. What is user defined stored procedure? Why do you need it?
9. What are indexes? Why are they needed?
10. Is index always useful? Is it a good idea to always create as many indexes as possible?
11. How is data stored if there is no clustered index? How about when you create a clustered index?
12. What are the differences between clustered and non-clustered indexes?

Coding Questions

Questions 1-7 inclusive are based on AdventureWorks data warehouse. (Note: Some table in the data warehouse might be removed, so it only contains internet sales)

1. Find the total Internet sales tax amount.

2. Find the Internet sales amount per order by year and quarter of order date.

3. Find the percentage of sales amount for each order over total sales amount of that month by shipping date.

4. Display the full name, age, address(City, State, Country) and marital status of all customers who live in the US

5. Create a view with product sold amount by subcategory by category by year and month of order date.

6. Use the view created to display product sold amount by category by year of order date.

7. Group the customers into different age groups: < 30, 30-50, 50+. Get the total number of customers and total number of Internet sales in each group.

The following question is independent of the AdventureWorks database.

8. Write a SQL query to find the most recent salary of each employee. In other words, given the Employee table and Salary table, construct a query to output the Output table.

Employee			Salary		
employee_id	**name**		**employee_id**	**effective_date**	**salary**
1	aaa		1	1/1/2020	100
2	bbb		2	2/3/2022	120
			1	20/4/2022	200

Output			
employee_id	**name**	**effective_date**	**salary**
1	aaa	20/4/2022	200
2	bbb	2/3/2022	120