19. Assignments on Aggregate Functions

Preparing Tables and Data

1. **Create a Table Sales with the below column and data.**
   Look into the Picture to identify the datatype.

123 SaleID	SaleDate	A-Z Region	A-Z Product	A-Z Category	123 Quantity	123 UnitPrice	123 Revenue
1	2024-11-01	North	Laptop	Electronics	5	800	4,000
2	2024-11-02	South	Smartphone	Electronics	10	600	6,000
3	2024-11-03	East	TV	Electronics	3	1,500	4,500
4	2024-11-04	West	Laptop	Electronics	2	850	1,700
5	2024-11-05	North	WashingMachine	Appliances	1	2,000	2,000
6	2024-11-06	South	Refrigerator	Appliances	1	2,500	2,500
7	2024-11-07	East	Microwave	Appliances	2	500	1,000

2. **Here is the script to create table and insert records**

```sql
CREATE TABLE Sales (
    SaleID INT PRIMARY KEY,
    SaleDate DATE,
    Region VARCHAR(50),
    Product VARCHAR(50),
    Category VARCHAR(50),
    Quantity INT,
    UnitPrice DECIMAL(10, 2),
    Revenue DECIMAL(10, 2)
);
```

```sql
INSERT INTO Sales (SaleID, SaleDate, Region, Product, Category, Quantity, UnitPrice, Revenue) VALUES
(1, '2024-11-01', 'North', 'Laptop', 'Electronics', 5, 800, 4000),
(2, '2024-11-02', 'South', 'Smartphone', 'Electronics', 10, 600, 6000),
(3, '2024-11-03', 'East', 'TV', 'Electronics', 3, 1500, 4500),
(4, '2024-11-04', 'West', 'Laptop', 'Electronics', 2, 850, 1700),
(5, '2024-11-05', 'North', 'WashingMachine', 'Appliances', 1, 2000, 2000),
(6, '2024-11-06', 'South', 'Refrigerator', 'Appliances', 1, 2500, 2500),
(7, '2024-11-07', 'East', 'Microwave', 'Appliances', 2, 500, 1000);
```

Lets Solve the Problems.

1. **Find out Total Amount of Sales done so far.**

   Ans: 21,700

2. **Find out Average Revenue per sales.**

   Ans: 3,100

3. **Find out** MaxRevenue **and** MinRevenue **per sales.**

   MaxRevenue: 6,000
   MinRevenue: 1,000

4. Find out total Quantity Sold Region wise

A-Z Region	123 TotalQuantity
North	6
South	11
East	5
West	2

5. Find out Average revenue Category wise

A-Z Category	123 AvgRevenue
Electronics	4,050
Appliances	1,833.333333

6. Find out Count of Sales by Product

A-Z Product	123 SaleCount
Laptop	2
Smartphone	1
TV	1
WashingMachine	1
Refrigerator	1
Microwave	1

7. Revenue Contribution Percentage by Region

A-Z Region	123 RevenuePercentage
North	27.65
South	39.17
East	25.35
West	7.83

8. List all the Product sold together in a concatenated String. It should not have duplicate.
   Hint: use Group_Concat

   Output:
   Laptop,Microwave,Refrigerator,Smartphone,TV,WashingMachine

9. List all the Regions in which we have sold the Products.
   It should be a JSON Array without duplicates.
   Hint: Use JSON_ARRAYAGG
   Output:
   ["North", "South", "East", "West"]

10. **List all the product sold along with the quantity as a json array. You should have 1 entry per sales**

```
{ } JSON_OBJECT(product,quantity)   ▼
{"Laptop": 5}
{"Smartphone": 10}
{"TV": 3}
{"Laptop": 2}
{"WashingMachine": 1}
{"Refrigerator": 1}
{"Microwave": 2}
```

11. **List Product and its total sales across as a json array**

```
{ } json_object(product,qty)   ▼
{"Laptop": 7}
{"Smartphone": 10}
{"TV": 3}
{"WashingMachine": 1}
{"Refrigerator": 1}
{"Microwave": 2}
```

12. **Generate a JSON Array of All Products Sold with Quantities**
   Note: This output should come as a single column value.

```
[
  {"Product": "Laptop", "Quantity": 5},
  {"Product": "Smartphone", "Quantity": 10},
  {"Product": "TV", "Quantity": 3},
  {"Product": "Laptop", "Quantity": 2},
  {"Product": "WashingMachine", "Quantity": 1},
  {"Product": "Refrigerator", "Quantity": 1},
  {"Product": "Microwave", "Quantity": 2}
]
```

13. **Get Region wise Total Revenue in JSON Format as shown below**

```
{
  "North": 6000,
  "South": 8500,
  "East": 5500,
  "West": 1700
}
```

14. **Generate a JSON Array of Regions with Their Respective Categories and Revenue**

A-Z Region ▼	{ } RegionCategoryRevenue ▼
East	[{"Revenue": 4500.00, "Category": "Electronics"}, {"Revenue": 1000.00, "Category": "Appliances"}]
North	[{"Revenue": 4000.00, "Category": "Electronics"}, {"Revenue": 2000.00, "Category": "Appliances"}]
South	[{"Revenue": 6000.00, "Category": "Electronics"}, {"Revenue": 2500.00, "Category": "Appliances"}]
West	[{"Revenue": 1700.00, "Category": "Electronics"}]

Assignments on Dates Function.

Lets Add few more records to cover more dates.

```
INSERT INTO Sales (SaleID, SaleDate, Region, Product, Category, Quantity, UnitPrice, Revenue)
VALUES
  (8, '2021-01-15', 'North', 'Laptop', 'Electronics', 5, 800, 4000),
  (9, '2021-12-25', 'South', 'Smartphone', 'Electronics', 10, 600, 6000),
  (10, '2022-05-10', 'East', 'TV', 'Electronics', 3, 1500, 4500),
  (11, '2022-11-20', 'West', 'Laptop', 'Electronics', 2, 850, 1700),
  (12, '2023-03-17', 'North', 'WashingMachine', 'Appliances', 1, 2000, 2000),
  (13, '2023-07-04', 'South', 'Refrigerator', 'Appliances', 1, 2500, 2500),
  (14, '2024-02-29', 'East', 'Microwave', 'Appliances', 2, 500, 1000), -- Leap year
  (15, '2024-10-15', 'West', 'Air Conditioner', 'Appliances', 3, 1800, 5400),
  (16, '2025-01-01', 'North', 'Speaker', 'Electronics', 6, 300, 1800),
  (17, '2025-12-31', 'South', 'Headphones', 'Electronics', 4, 250, 1000);
```

15. **Find Total Revenue by Year-Month Wise ,sort it by Desc order**

A-Z SaleMonth ▼	123 TotalRevenue ▼
2024-11	21,700
2021-01	4,000
2021-12	6,000
2022-05	4,500
2022-11	1,700
2023-03	2,000
2023-07	2,500
2024-02	1,000
2024-10	5,400
2025-01	1,800
2025-12	1,000

16. **Revenue Generated on Weekends**

Answer: 18,200

17. **Revenue Generated on Weekend for any Given Year.**

SaleYear	WeekendRevenue
2024	10,500

18. Find Year Wise,Weekend Sales Order by Sales Year

123 SaleYear	123 WeekendRevenue
2,024	10,500
2,022	1,700
2,021	6,000

19. Total Revenue by Day of week

A-Z SaleDay	123 TotalRevenue
Sunday	6,200
Monday	1,700
Tuesday	14,400
Wednesday	5,300
Thursday	2,000
Friday	10,000
Saturday	12,000

20. Total Revenue by Day of week for any Given Year. If I input 2024, It should give me the list of all the revenue done weekday wise.

A-Z DayOfWeek	123 TotalRevenue
Sunday	4,500
Monday	1,700
Tuesday	7,400
Wednesday	2,500
Thursday	2,000
Friday	4,000
Saturday	6,000

21. YearWise, Week day wise, total sales order by year

123 SaleYear	A-Z Weekday	123 TotalRevenue
2,025	Wednesday	2,800
2,024	Sunday	4,500
2,024	Monday	1,700
2,024	Tuesday	7,400
2,024	Wednesday	2,500
2,024	Thursday	2,000
2,024	Friday	4,000
2,024	Saturday	6,000
2,023	Tuesday	2,500
2,023	Friday	2,000
2,022	Sunday	1,700
2,022	Tuesday	4,500
2,021	Friday	4,000
2,021	Saturday	6,000

22. Average Revenue by Day of week

A-Z SaleDay	123 AvgRevenue
Sunday	3,100
Monday	1,700
Tuesday	3,600
Wednesday	1,766.666667
Thursday	1,000
Friday	3,333.333333
Saturday	6,000

23. Total Number of sales and total revenue in last 90 days
10   29900.00

24. Revenue Split by Year and Quarter

123 SaleYear	123 SaleQuarter	123 TotalRevenue
2,025	4	1,000
2,025	1	1,800
2,024	4	27,100
2,024	1	1,000
2,023	3	2,500
2,023	1	2,000
2,022	4	1,700
2,022	2	4,500
2,021	4	6,000
2,021	1	4,000

25. What is the First and Last Sale Date
2021-01-15 2025-12-31