Courier Management System

Task 5 - Scope: Inner Queries, Non Equi Joins, Equi joins,Exist,Any,All

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Solve the following queries in the Schema that you have created above

49. Find couriers that have a weight greater than the average weight of all couriers

50. Find the names of all employees who have a salary greater than the average salary:

51. Find the total cost of all courier services where the cost is less than the maximum cost

52. Find all couriers that have been paid for

53. Find the locations where the maximum payment amount was made

54. Find all couriers whose weight is greater than the weight of all couriers sent by a specific sender (e.g., 'SenderName')

This document provides SQL queries for various operations on the Courier Management System database.

These queries were executed on the schema designed in Task 1.

49. Find couriers that have a weight greater than the average weight of all couriers

To Find couriers that have a weight greater than the average weight of all couriers ,

```
SELECT CourierID, SenderName, ReceiverName, Weight
FROM Courier
WHERE Weight > (SELECT AVG(Weight) FROM Courier);
```

Explanation:

- Inner Query (SELECT AVG(Weight) FROM Courier): Calculates the average weight of all couriers.
- Outer Query: Retrieves couriers where the weight is greater than the calculated average.

Output :

CourierID	SenderName	ReceiverName	Weight	TrackingNumber	Deliverydate
10	Charlotte Evans	John Doe	5.00	TRK10010	2024-03-24
15	Mason Scott	Sophia Johnson	5.00	TRK10015	2024-03-25
20	Noah White	John Doe	4.50	TRK10020	2024-03-31
23	Michael Scott	Jim Halpert	5.00	TRK1003	2025-03-16
24	Pam Beesly	Dwight Schrute	4.80	TRK1004	2025-03-17
36	Olivia Adams	Chris Nolan	4.50	TRK3001	NULL

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50. Find the names of all employees who have a salary greater than the average salary:

To Find the names of all employees who have a salary greater than the average salary

```
SELECT EmployeeID, EmployeeName, Salary
FROM Employee
WHERE Salary > (SELECT AVG(Salary) FROM Employee);
```

Explanation:

- The inner query (SELECT AVG(Salary) FROM Employee) calculates the average salary of all employees.
- The outer query retrieves employees whose salary is greater than the average salary.

Output :

EmployeeID	Name	Email	ContactNumber	Role	Salary
2	Emma Brown	emma@example.com	8765123498	Manager	50000.00
5	Mason Scott	mason@example.com	5432167890	Supervisor	40000.00
7	Ethan Carter	ethan@example.com	3210987654	IT Specialist	55000.00
8	Isabella Lewis	isabella@example.com	2109876543	Finance Analyst	60000.00
12	Harper Reed	harper@example.com	8765000002	Manager	52000.00
15	Henry Green	henry@example.com	5432000005	Supervisor	42000.00

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51. Find the total cost of all courier services where the cost is less than the maximum cost

To Find the total cost of all courier services where the cost is less than the maximum cost

```
SELECT SUM(Cost) AS TotalServiceCost
FROM courierservices
WHERE Cost < (SELECT MAX(Cost) FROM courierservices);
```

Explanation:

- The **inner query** (SELECT MAX(Cost) FROM courierservices) retrieves the **maximum service cost** from the courierservices table.
- The **outer query** calculates the **sum of all service costs** where the cost is **less than the maximum cost**.

Output :

TotalServiceCost
9800.00

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52. Find all couriers that have been paid for

To find all couriers that have been paid for

```
SELECT c.*
FROM courier c
WHERE EXISTS (
   SELECT 1
   FROM payment p
   WHERE p.CourierID = c.CourierID
);
```

Explanation:

- The **inner query** (SELECT 1 FROM payment p WHERE p.CourierID = c.CourierID) checks if a payment record exists for each courier.
- The **EXISTS condition** ensures that only couriers with a matching CourierID in the payment table are selected.

Output :

CourierID	SenderName	SenderAddress	ReceiverName	ReceiverAddress	Weight	Status	TrackingNumber	DeliveryDate	EmployeeID	SenderID	ServiceID
1	John Doe	123 Main St	Alice Smith	456 Elm St	2.50	In Transit	TRK10001	2024-03-20	1	1	11
2	Alice Smith	456 Elm St	Michael Brown	789 Oak St	1.20	Delivered	TRK10002	2024-03-18	1	2	16
3	Michael Brown	789 Oak St	Emma Wilson	321 Pine St	3.00	Pending	TRK10003	2024-03-22	2	3	11
4	Emma Wilson	321 Pine St	Daniel Lee	654 Cedar St	2.80	In Transit	TRK10004	2024-03-21	2	4	11
5	Daniel Lee	654 Cedar St	Sophia Green	987 Maple St	4.10	Shipped	TRK10005	2024-03-19	3	5	9
6	Sophia Green	987 Maple St	William Clark	258 Birch St	1.90	Delivered	TRK10006	2024-03-17	3	6	11

53. Find the locations where the maximum payment amount was made

To Find the locations where the maximum payment amount was made

```
SELECT l.*, p.Amount
FROM Location l
JOIN Payment p ON l.LocationID = p.LocationID
WHERE p.Amount = (SELECT MAX(Amount) FROM Payment);
```

Explanation:

- The subquery finds the highest Amount in the Payment table.
- The JOIN ensures that the corresponding Location details are retrieved.
- The WHERE clause filters for rows where the payment matches the maximum.

Output :

	LocationID	LocationName	Address	AMount
▶	8	Retail Store 2	555 Plaza Blvd	4500.00

54. Find all couriers whose weight is greater than the weight of all couriers sent by a specific sender

To Find all couriers whose weight is greater than the weight of all couriers sent by a specific sender

SELECT *

FROM Courier

WHERE Weight > ALL (SELECT Weight FROM Courier WHERE SenderName = 'John Doe');

Explanation:

- The **subquery** retrieves the weights of all couriers sent by the sender 'John Doe'.
- The **ALL operator** ensures that only couriers with a weight **greater than every single weight** sent by 'John Doe' are selected.

Output :

CourierID	SenderName	SenderAddress	ReceiverName	ReceiverAddress	Weight	Status	TrackingNumber	DeliveryDate	EmployeeID	SenderID	ServiceID
5	Daniel Lee	654 Cedar St	Sophia Green	987 Maple St	4.10	Shipped	TRK10005	2024-03-19	3	5	9
10	Charlotte Evans	852 Willow St	John Doe	123 Main St	5.00	Pending	TRK10010	2024-03-24	5	10	9
13	Liam Parker	963 River St	Ava Martinez	159 Lake St	4.10	Pending	TRK10013	2024-03-28	7	13	9
15	Mason Scott	357 Bay St	Sophia Johnson	246 Ocean St	5.00	Shipped	TRK10015	2024-03-25	8	15	9
20	Noah White	951 Cliff St	John Doe	123 Main St	4.50	Pending	TRK10020	2024-03-31	10	20	9
23	Michael Scott	Scranton, PA	Jim Halpert	Stamford, CT	5.00	Delivered	TRK1003	2025-03-16	12	NULL	9

Conclusion :

Task 5 involved complex SQL queries utilizing **inner queries, joins, and comparison operators (EXISTS, ANY, ALL)** to extract meaningful insights from the database. These queries helped analyze courier weights, employee salaries, service costs, and payments efficiently, demonstrating advanced SQL techniques.