Assignment : Courier Management System
Task 4 : Inner Join,Full Outer Join, Cross Join, Left Outer Join,Right Outer Join

23. Retrieve Payments with Courier Information

24. Retrieve Payments with Location Information

25. Retrieve Payments with Courier and Location Information

26. List all payments with courier details

27. Total payments received for each courier

28. List payments made on a specific date

29. Get Courier Information for Each Payment

30. Get Payment Details with Location

31. Calculating Total Payments for Each Courier

32. List Payments Within a Date Range

33. Retrieve a list of all users and their corresponding courier records, including cases where there are no matches on either side

34. Retrieve a list of all couriers and their corresponding services, including cases where there are no matches on either side

35. Retrieve a list of all employees and their corresponding payments, including cases where there are no matches on either side

36. List all users and all courier services, showing all possible combinations.

37. List all employees and all locations, showing all possible combinations:

38. Retrieve a list of couriers and their corresponding sender information (if available)

39. Retrieve a list of couriers and their corresponding receiver information (if available):

40. Retrieve a list of couriers along with the courier service details (if available):

41. Retrieve a list of employees and the number of couriers assigned to each employee:

42. Retrieve a list of locations and the total payment amount received at each location:

43. Retrieve all couriers sent by the same sender (based on SenderName).

44. List all employees who share the same role.

45. Retrieve all payments made for couriers sent from the same location.

46. Retrieve all couriers sent from the same location (based on SenderAddress).

47. List employees and the number of couriers they have delivered:

48. Find couriers that were paid an amount greater than the cost of their respective courier services

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

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

Answers:

-- 23. Retrieve Payments with Courier Information

SELECT p.*, c.*

FROM Payment p

INNER JOIN Courier c ON p.CourierID = c.CourierID;

PaymentID	CourierID	LocationID	Amount	PaymentDate	CourierID	UserID	SenderName	Sender Address	ReceiverName	ReceiverAddress	Weight	Status	TrackingNumber	DeliveryDate
1	1	1	50.00	2025-03-29	1	1	Alice Johnson	123 Main St	David Brown	789 Oak St	2.50	In Transit	TRK12345	2025-03-30
2	2	2	100.00	2025-03-28	2	2	Bob Smith	456 Elm St	Eve Adams	101 Pine St	1.20	Delivered	TRK67890	2025-03-28
3	3	3	150.00	2025-03-27	3	3	Charlie Adams	789 Pine St	Frank Miller	303 Cedar St	3.00	Pending	TRK13579	2025-04-01
4	4	4	200.00	2025-03-26	4	4	David Brown	101 Oak St	Grace Lee	404 Birch St	4.50	Shipped	TRK24680	2025-04-02
5	5	5	250.00	2025-03-25	5	5	Eve Watson	202 Maple St	Henry White	505 Redwood St	2.80	In Transit	TRK11223	2025-04-05
6	6	6	300.00	2025-03-24	6	6	Frank Miller	303 Cedar St	Ivy Thomas	606 Aspen St	1.50	Delivered	TRK33445	2025-04-03

-- 24. Retrieve Payments with Location Information

SELECT p.*, l.*

FROM Payment p

INNER JOIN Location l ON p.LocationID = l.LocationID;

PaymentID	CourierID	LocationID	Amount	PaymentDate	LocationID	LocationName	Address
1	1	1	50.00	2025-03-29	1	Downtown Hub	500 Center St
2	2	2	100.00	2025-03-28	2	Uptown Hub	600 North St
3	3	3	150.00	2025-03-27	3	East End Hub	700 East St
4	4	4	200.00	2025-03-26	4	West End Hub	800 West St
5	5	5	250.00	2025-03-25	5	South Side Hub	900 South St
6	6	6	300.00	2025-03-24	6	North Side Hub	100 North St

-- 25. Retrieve Payments with Courier and Location Information

SELECT p.*, c.*, l.*

FROM Payment p

INNER JOIN Courier c ON p.CourierID = c.CourierID

INNER JOIN Location l ON p.LocationID = l.LocationID;

-- 26. List all payments with courier details

SELECT p.*, c.*

FROM Payment p

LEFT JOIN Courier c ON p.CourierID = c.CourierID;

-- 27. Total payments received for each courier

SELECT CourierID, SUM(Amount) AS TotalPayments

FROM Payment

GROUP BY CourierID;

CourierID	TotalPayments
1	50.00
2	100.00
3	150.00
4	200.00
5	250.00
6	300.00

Result 21 ×

-- 28. List payments made on a specific date

SELECT * FROM Payment WHERE PaymentDate = '2025-03-29';

PaymentID	CourierID	LocationID	Amount	PaymentDate
1	1	1	50.00	2025-03-29
NULL	NULL	NULL	NULL	NULL

-- 29. Get Courier Information for Each Payment

SELECT p.*, c.*

FROM Payment p

INNER JOIN Courier c ON p.CourierID = c.CourierID;

PaymentID	CourierID	LocationID	Amount	PaymentDate	CourierID	UserID	SenderName	Sender Address	ReceiverName	Receiver Address	Weight	Status	TrackingNumber	DeliveryDate
1	1	1	50.00	2025-03-29	1	1	Alice Johnson	123 Main St	David Brown	789 Oak St	2.50	In Transit	TRK12345	2025-03-30
2	2	2	100.00	2025-03-28	2	2	Bob Smith	456 Elm St	Eve Adams	101 Pine St	1.20	Delivered	TRK67890	2025-03-28
3	3	3	150.00	2025-03-27	3	3	Charlie Adams	789 Pine St	Frank Miller	303 Cedar St	3.00	Pending	TRK13579	2025-04-01
4	4	4	200.00	2025-03-26	4	4	David Brown	101 Oak St	Grace Lee	404 Birch St	4.50	Shipped	TRK24680	2025-04-02
5	5	5	250.00	2025-03-25	5	5	Eve Watson	202 Maple St	Henry White	505 Redwood St	2.80	In Transit	TRK11223	2025-04-05
6	6	6	300.00	2025-03-24	6	6	Frank Miller	303 Cedar St	Ivy Thomas	606 Aspen St	1.50	Delivered	TRK33445	2025-04-03

Result 23 ×

-- 30. Get Payment Details with Location

SELECT p.*, l.*

FROM Payment p

INNER JOIN Location l ON p.LocationID = l.LocationID;

PaymentID	CourierID	LocationID	Amount	PaymentDate	LocationID	LocationName	Address
1	1	1	50.00	2025-03-29	1	Downtown Hub	500 Center St
2	2	2	100.00	2025-03-28	2	Uptown Hub	600 North St
3	3	3	150.00	2025-03-27	3	East End Hub	700 East St
4	4	4	200.00	2025-03-26	4	West End Hub	800 West St
5	5	5	250.00	2025-03-25	5	South Side Hub	900 South St
6	6	6	300.00	2025-03-24	6	North Side Hub	100 North St

Result 24 ×

-- 31. Calculating Total Payments for Each Courier

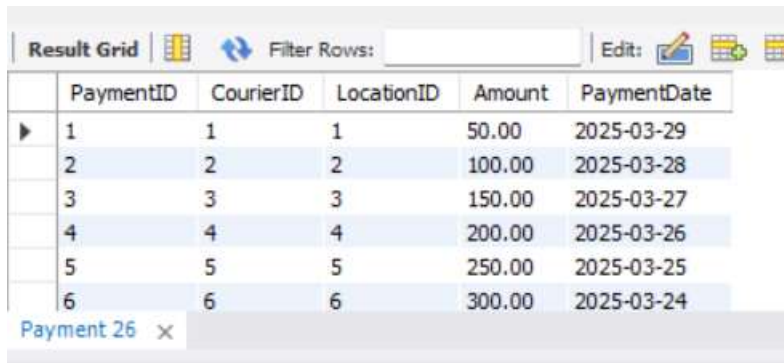SELECT CourierID, SUM(Amount) AS TotalPayments

FROM Payment

GROUP BY CourierID;

CourierID	TotalPayments
1	50.00
2	100.00
3	150.00
4	200.00
5	250.00
6	300.00

Result 25 ∨

-- 32. List Payments Within a Date Range

SELECT * FROM Payment WHERE PaymentDate BETWEEN '2025-03-20' AND '2025-03-29';

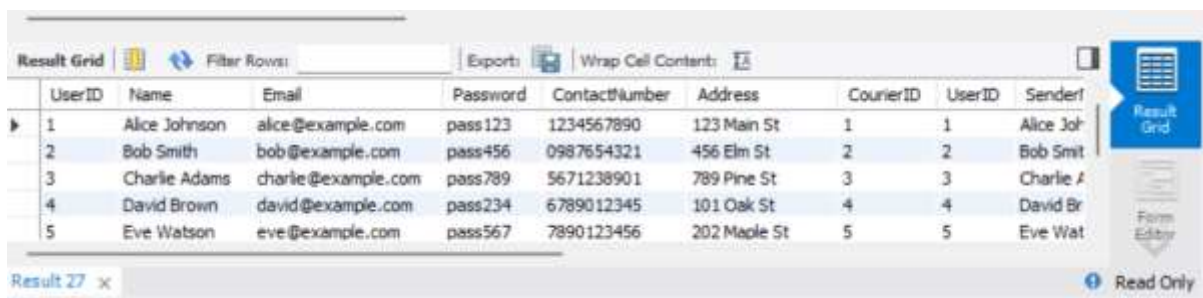|	PaymentID	CourierID	LocationID	Amount	PaymentDate
▶	1	1	1	50.00	2025-03-29
	2	2	2	100.00	2025-03-28
	3	3	3	150.00	2025-03-27
	4	4	4	200.00	2025-03-26
	5	5	5	250.00	2025-03-25
	6	6	6	300.00	2025-03-24

Payment 26 ✕

-- 33. Retrieve a list of all users and their corresponding courier records (including unmatched cases)

SELECT u.*, c.*

FROM User u

LEFT JOIN Courier c ON u.UserID = c.UserID;

	UserID	Name	Email	Password	ContactNumber	Address	CourierID	UserID	Sender
▶	1	Alice Johnson	alice@example.com	pass123	1234567890	123 Main St	1	1	Alice Joh
	2	Bob Smith	bob@example.com	pass456	0987654321	456 Elm St	2	2	Bob Smit
	3	Charlie Adams	charlie@example.com	pass789	5671238901	789 Pine St	3	3	Charlie A
	4	David Brown	david@example.com	pass234	6789012345	101 Oak St	4	4	David Br
	5	Eve Watson	eve@example.com	pass567	7890123456	202 Maple St	5	5	Eve Wat

Result 27 ✕

-- 34. Retrieve a list of all couriers and their corresponding services (including unmatched cases)

SELECT c.*, cs.*

FROM Courier c

LEFT JOIN CourierServices cs ON c.CourierID = cs.ServiceID;

	CourierID	UserID	SenderName	SenderAddress	ReceiverName	ReceiverAddress	Weight	Status	TrackingNumb
▶	1	1	Alice Johnson	123 Main St	David Brown	789 Oak St	2.50	In Transit	TRK12345
	2	2	Bob Smith	456 Elm St	Eve Adams	101 Pine St	1.20	Delivered	TRK67890
	3	3	Charlie Adams	789 Pine St	Frank Miller	303 Cedar St	3.00	Pending	TRK13579
	4	4	David Brown	101 Oak St	Grace Lee	404 Birch St	4.50	Shipped	TRK24680
	5	5	Eve Watson	202 Maple St	Henry White	505 Redwood St	2.80	In Transit	TRK11223
	6	6	Frank Miller	303 Cedar St	Ivy Thomas	606 Aspen St	1.50	Delivered	TRK33445
	7	7	Grace Lee	404 Birch St	Jack Wilson	707 Oakwood St	2.00	Pending	TRK55667

-- 35. Retrieve a list of all employees and their corresponding payments (including unmatched cases)

SELECT e.*, p.*

FROM Employee e

LEFT JOIN Payment p ON e.EmployeeID = p.PaymentID;

	EmployeeID	Name	Email	ContactNumber	Role	Salary	PaymentID	CourierID	LocationID	
▶	1	John Doe	john.doe@example.com	1122334455	Delivery Agent	40000.00	1	1	1	5(
	2	Emily Clark	emily.clark@example.com	2233445566	Manager	60000.00	2	2	2	1(
	3	Michael Johnson	michael.johnson@example.com	3344556677	Supervisor	55000.00	3	3	3	1!
	4	Jessica Lee	jessica.lee@example.com	4455667788	Courier Handler	42000.00	4	4	4	2(
	5	David Wilson	david.wilson@example.com	5566778899	Delivery Agent	40000.00	5	5	5	2!
	6	Sarah Brown	sarah.brown@example.com	6677889900	Customer Support	45000.00	6	6	6	3(
	7	James White	james.white@example.com	7788990011	Delivery Agent	41000.00	7	7	7	3!

-- 36. List all users and all courier services (cross join for all possible combinations)

SELECT * FROM User CROSS JOIN CourierServices;

	UserID	Name	Email	Password	ContactNumber	Address	ServiceID	ServiceName	Cost
▶	10	Jack Wilson	jack@example.com	pass012	6547891230	707 Oakwood St	1	Standard Delivery	50.00
	9	Ivy Thomas	ivy@example.com	pass901	3214567890	606 Aspen St	1	Standard Delivery	50.00
	8	Henry White	henry@example.com	pass890	1230984567	505 Redwood St	1	Standard Delivery	50.00
	7	Grace Lee	grace@example.com	pass789	9012345678	404 Birch St	1	Standard Delivery	50.00
	6	Frank Miller	frank@example.com	pass678	8901234567	303 Cedar St	1	Standard Delivery	50.00
	5	Eve Watson	eve@example.com	pass567	7890123456	202 Maple St	1	Standard Delivery	50.00
	4	David Brown	david@example.com	pass234	6789012345	101 Oak St	1	Standard Delivery	50.00
	3	Charlie Adams	charlie@example.com	pass789	5671238901	789 Pine St	1	Standard Delivery	50.00

-- 37. List all employees and all locations (cross join for all possible combinations)

SELECT * FROM Employee CROSS JOIN Location;

EmployeeID	Name	Email	ContactNumber	Role	Salary	LocationID	LocationName	Address
10	Olivia Harris	olivia.harris@example.com	1111222333	Delivery Agent	40000.00	1	Downtown Hub	500 Center
9	Robert Black	robert.black@example.com	9900112233	Warehouse Manager	50000.00	1	Downtown Hub	500 Center
8	Linda Green	linda.green@example.com	8899001122	Finance Manager	70000.00	1	Downtown Hub	500 Center
7	James White	james.white@example.com	7788990011	Delivery Agent	41000.00	1	Downtown Hub	500 Center
6	Sarah Brown	sarah.brown@example.com	6677889900	Customer Support	45000.00	1	Downtown Hub	500 Center
5	David Wilson	david.wilson@example.com	5566778899	Delivery Agent	40000.00	1	Downtown Hub	500 Center
4	Jessica Lee	jessica.lee@example.com	4455667788	Courier Handler	42000.00	1	Downtown Hub	500 Center

-- 38. Retrieve a list of couriers and their corresponding sender information

SELECT CourierID, SenderName, SenderAddress FROM Courier;

CourierID	SenderName	SenderAddress
1	Alice Johnson	123 Main St
2	Bob Smith	456 Elm St
3	Charlie Adams	789 Pine St
4	David Brown	101 Oak St
5	Eve Watson	202 Maple St
6	Frank Miller	303 Cedar St
7	Grace Lee	404 Birch St
8	Henry White	505 Redwood St

Courier 32

-- 39. Retrieve a list of couriers and their corresponding receiver information

SELECT CourierID, ReceiverName, ReceiverAddress FROM Courier;

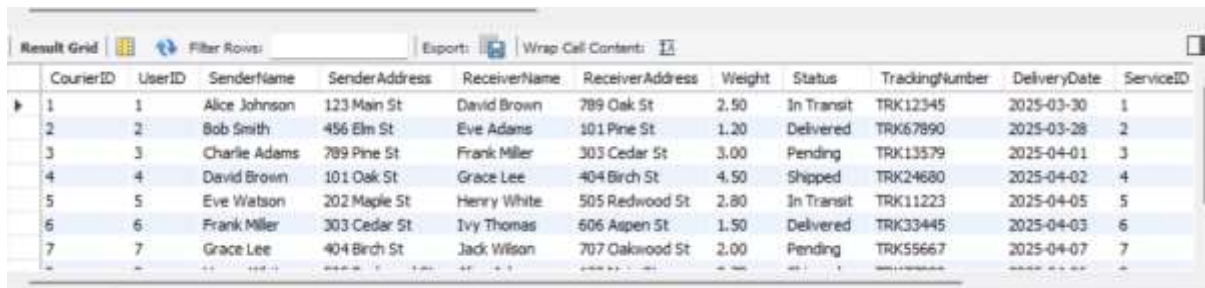| CourierID	ReceiverName	ReceiverAddress
1	David Brown	789 Oak St
2	Eve Adams	101 Pine St
3	Frank Miller	303 Cedar St
4	Grace Lee	404 Birch St
5	Henry White	505 Redwood St
6	Ivy Thomas	606 Aspen St
7	Jack Wilson	707 Oakwood St
8	Alice Johnson	123 Main St

Courier 33

-- 40. Retrieve a list of couriers along with the courier service details

SELECT c.*, cs.*

FROM Courier c

LEFT JOIN CourierServices cs ON c.CourierID = cs.ServiceID;

	CourierID	UserID	SenderName	SenderAddress	ReceiverName	ReceiverAddress	Weight	Status	TrackingNumber	DeliveryDate	ServiceID
▶	1	1	Alice Johnson	123 Main St	David Brown	789 Oak St	2.50	In Transit	TRK12345	2025-03-30	1
	2	2	Bob Smith	456 Elm St	Eve Adams	101 Pine St	1.20	Delivered	TRK67890	2025-03-28	2
	3	3	Charlie Adams	789 Pine St	Frank Miller	303 Cedar St	3.00	Pending	TRK13579	2025-04-01	3
	4	4	David Brown	101 Oak St	Grace Lee	404 Birch St	4.50	Shipped	TRK24680	2025-04-02	4
	5	5	Eve Watson	202 Maple St	Henry White	505 Redwood St	2.80	In Transit	TRK11223	2025-04-05	5
	6	6	Frank Miller	303 Cedar St	Ivy Thomas	606 Aspen St	1.50	Delivered	TRK33445	2025-04-03	6
	7	7	Grace Lee	404 Birch St	Jack Wilson	707 Oakwood St	2.00	Pending	TRK55667	2025-04-07	7

-- 41. Retrieve a list of employees and the number of couriers assigned to each (assuming an assignment table is missing)

SELECT e.EmployeeID, e.Name, COUNT(c.CourierID) AS TotalCouriers

FROM Employee e

LEFT JOIN Courier c ON e.EmployeeID = c.CourierID

GROUP BY e.EmployeeID, e.Name;

	EmployeeID	Name	TotalCouriers
▶	1	John Doe	1
	2	Emily Clark	1
	3	Michael Johnson	1
	4	Jessica Lee	1
	5	David Wilson	1
	6	Sarah Brown	1
	7	James White	1
	8	Linda Green	1

-- 42. Retrieve a list of locations and the total payment amount received at each location

SELECT l.LocationID, l.LocationName, SUM(p.Amount) AS TotalPayments

FROM Payment p

JOIN Location l ON p.LocationID = l.LocationID

9

GROUP BY l.LocationID, l.LocationName;

LocationID	LocationName	TotalPayments
1	Downtown Hub	50.00
2	Uptown Hub	100.00
3	East End Hub	150.00
4	West End Hub	200.00
5	South Side Hub	250.00
6	North Side Hub	300.00
7	City Center Hub	350.00
8	Airport Hub	400.00
9	Harbor Hub	450.00
10	Industrial Hub	500.00

Result 36 ×

-- 43. Retrieve all couriers sent by the same sender

SELECT SenderName, COUNT(CourierID) AS TotalCouriers

FROM Courier

GROUP BY SenderName;

SenderName	TotalCouriers
Alice Johnson	1
Bob Smith	1
Charlie Adams	1
David Brown	1
Eve Watson	1
Frank Miller	1
Grace Lee	1
Henry White	1
Ivy Thomas	1
Jack Wilson	1

-- 44. List all employees who share the same role

SELECT Role, COUNT(EmployeeID) AS TotalEmployees

FROM Employee

GROUP BY Role;

Role	TotalEmployees
Delivery Agent	4
Manager	1
Supervisor	1
Courier Handler	1
Customer Support	1
Finance Manager	1
Warehouse Manager	1

-- 45. Retrieve all payments made for couriers sent from the same location

SELECT c.SenderAddress, SUM(p.Amount) AS TotalPayments

FROM Courier c

JOIN Payment p ON c.CourierID = p.CourierID

GROUP BY c.SenderAddress;

SenderAddress	TotalCouriers
123 Main St	1
456 Elm St	1
789 Pine St	1
101 Oak St	1
202 Maple St	1
303 Cedar St	1
404 Birch St	1
505 Redwood St	1
606 Aspen St	1
707 Oakwood St	1

-- 46. Retrieve all couriers sent from the same location

SELECT SenderAddress, COUNT(CourierID) AS TotalCouriers

FROM Courier

GROUP BY SenderAddress;

-- 47. List employees and the number of couriers they have delivered

SELECT e.EmployeeID, e.Name, COUNT(c.CourierID) AS TotalDelivered

FROM Employee e

LEFT JOIN Courier c ON e.EmployeeID = c.CourierID

WHERE c.Status = 'Delivered'

GROUP BY e.EmployeeID, e.Name;

-- 48. Find couriers that were paid an amount greater than the cost of their respective courier services

SELECT c.CourierID, p.Amount, cs.Cost

FROM Payment p

JOIN Courier c ON p.CourierID = c.CourierID

JOIN CourierServices cs ON c.CourierID = cs.ServiceID

WHERE p.Amount > cs.Cost;

	CourierID	Amount	Cost
▶	7	350.00	250.00
	8	400.00	180.00
	9	450.00	130.00

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

SELECT * FROM Courier WHERE Weight > (SELECT AVG(Weight) FROM Courier);

	CourierID	UserID	SenderName	SenderAddress	ReceiverName	ReceiverAddress	Weight	Status	TrackingNumber	DeliveryDate
▶	3	3	Charlie Adams	789 Pine St	Frank Miller	303 Cedar St	3.00	Pending	TRK13579	2025-04-01
	4	4	David Brown	101 Oak St	Grace Lee	404 Birch St	4.50	Shipped	TRK24680	2025-04-02
	5	5	Eve Watson	202 Maple St	Henry White	505 Redwood St	2.80	In Transit	TRK11223	2025-04-05
	8	8	Henry White	505 Redwood St	Alice Johnson	123 Main St	3.70	Shipped	TRK77889	2025-04-06
*	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

-- 50. Find employees with a salary greater than the average salary

SELECT * FROM Employee WHERE Salary > (SELECT AVG(Salary) FROM Employee);

	EmployeeID	Name	Email	ContactNumber	Role	Salary
▶	2	Emily Clark	emily.clark@example.com	2233445566	Manager	60000.00
	3	Michael Johnson	michael.johnson@example.com	3344556677	Supervisor	55000.00
	8	Linda Green	linda.green@example.com	8899001122	Finance Manager	70000.00
	9	Robert Black	robert.black@example.com	9900112233	Warehouse Manager	50000.00
*	NULL	NULL	NULL	NULL	NULL	NULL

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

SELECT SUM(Cost) AS TotalCost FROM CourierServices WHERE Cost < (SELECT MAX(Cost) FROM CourierServices);

	TotalCost
▶	1760.00

-- 52. Find all couriers that have been paid for

SELECT * FROM Courier WHERE CourierID IN (SELECT DISTINCT CourierID FROM Payment);

CourierID	UserID	SenderName	SenderAddress	ReceiverName	ReceiverAddress	Weight	Status	TrackingNumber	DeliveryDate
1	1	Alice Johnson	123 Main St	David Brown	789 Oak St	2.50	In Transit	TRK12345	2025-03-30
2	2	Bob Smith	456 Elm St	Eve Adams	101 Pine St	1.20	Delivered	TRK67890	2025-03-28
3	3	Charlie Adams	789 Pine St	Frank Miller	303 Cedar St	3.00	Pending	TRK13579	2025-04-01
4	4	David Brown	101 Oak St	Grace Lee	404 Birch St	4.50	Shipped	TRK24680	2025-04-02
5	5	Eve Watson	202 Maple St	Henry White	505 Redwood St	2.80	In Transit	TRK11223	2025-04-05
6	6	Frank Miller	303 Cedar St	Ivy Thomas	606 Aspen St	1.50	Delivered	TRK33445	2025-04-03
7	7	Grace Lee	404 Birch St	Jack Wilson	707 Oakwood St	2.00	Pending	TRK55667	2025-04-07
8	8	Henry White	505 Redwood St	Alice Johnson	123 Main St	3.70	Shipped	TRK77889	2025-04-06
9	9	Ivy Thomas	606 Aspen St	Bob Smith	456 Elm St	2.30	In Transit	TRK99001	2025-04-08
10	10	Jack Wilson	707 Oakwood St	Charlie Adams	789 Pine St	1.80	Delivered	TRK11234	2025-04-09

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

SELECT LocationID, MAX(Amount) AS MaxPayment FROM Payment GROUP BY LocationID;

LocationID	MaxPayment
1	50.00
2	100.00
3	150.00
4	200.00
5	250.00
6	300.00
7	350.00
8	400.00
9	450.00
10	500.00

-- 54. 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 = 'Alice Johnson');

CourierID	UserID	SenderName	SenderAddress	ReceiverName	ReceiverAddress	Weight	Status	TrackingNumber	DeliveryDate
3	3	Charlie Adams	789 Pine St	Frank Miller	303 Cedar St	3.00	Pending	TRK13579	2025-04-01
4	4	David Brown	101 Oak St	Grace Lee	404 Birch St	4.50	Shipped	TRK24680	2025-04-02
5	5	Eve Watson	202 Maple St	Henry White	505 Redwood St	2.80	In Transit	TRK11223	2025-04-05
8	8	Henry White	505 Redwood St	Alice Johnson	123 Main St	3.70	Shipped	TRK77889	2025-04-06
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL