

# Assignment – Courier Management System

## Task 1: Database Design

Design a SQL schema for a Courier Management System with tables for Customers, Couriers, Orders, and Parcels. Define the relationships between these tables using appropriate foreign keys.

### Requirements:

- Define the Database Schema • Create SQL tables for entities such as User, Courier, Employee, Location, Payment.
- Define relationships between these tables (one-to-many, many-to-many, etc.).
- Populate Sample Data
- Insert sample data into the tables to simulate real-world scenarios.

### Solution:

#### Database Schema

```
CREATE TABLE User (UserID INT PRIMARY KEY, Name VARCHAR(255), Email VARCHAR(255) UNIQUE,  
Password VARCHAR(255), ContactNumber VARCHAR(20), Address TEXT);  
  
CREATE TABLE Courier (CourierID INT PRIMARY KEY, SenderName VARCHAR(255), SenderAddress TEXT,  
ReceiverName VARCHAR(255), ReceiverAddress TEXT, Weight DECIMAL(5, 2), Status VARCHAR(50),  
TrackingNumber VARCHAR(20) UNIQUE, DeliveryDate DATE);  
  
CREATE TABLE CourierServices (ServiceID INT PRIMARY KEY, ServiceName VARCHAR(100), Cost  
DECIMAL(8, 2));  
  
CREATE TABLE Employee (EmployeeID INT PRIMARY KEY, Name VARCHAR(255), Email VARCHAR(255)  
UNIQUE, ContactNumber VARCHAR(20), Role VARCHAR(50), Salary DECIMAL(10, 2));  
  
CREATE TABLE Location (LocationID INT PRIMARY KEY, LocationName VARCHAR(100), Address TEXT);  
  
CREATE TABLE Payment (PaymentID INT PRIMARY KEY, CourierID INT, LocationID INT, Amount  
DECIMAL(10, 2), PaymentDate DATE, FOREIGN KEY (CourierID) REFERENCES Courier(CourierID),  
FOREIGN KEY (LocationID) REFERENCES Location(LocationID));
```

```

mysql> show tables;
+-----+
| Tables_in_courier_management_system |
+-----+
| courier
| courierservices
| employee
| location
| payment
| user
+-----+
6 rows in set (0.00 sec)

mysql>

```

## Populating Sample Data:

```

INSERT INTO User (UserID, Name, Email, Password, ContactNumber, Address) VALUES (1, 'Rajesh Kumar', 'rajesh.kumar@example.com', 'Pass@123', '9876543210', '12, MG Road, Bengaluru'), (2, 'Aditi Sharma', 'aditi.sharma@example.com', 'Secure@456', '8765432109', '45, Nehru Nagar, New Delhi'), (3, 'Vikram Reddy', 'vikram.reddy@example.com', 'Strong@789', '7654321098', '88, Jubilee Hills, Hyderabad'), (4, 'Nisha Patel', 'nisha.patel@example.com', 'Safe@101', '6543210987', '23, SG Highway, Ahmedabad'), (5, 'Manoj Singh', 'manoj.singh@example.com', 'Protect@202', '5432109876', '67, MI Road, Jaipur');

```

```

INSERT INTO Courier (CourierID, SenderName, SenderAddress, ReceiverName, ReceiverAddress, Weight, Status, TrackingNumber, DeliveryDate) VALUES (1, 'Rajesh Kumar', '12, MG Road, Bengaluru', 'Nisha Patel', '23, SG Highway, Ahmedabad', 2.50, 'Shipped', 'INTRK001234', '2024-10-01'), (2, 'Aditi Sharma', '45, Nehru Nagar, New Delhi', 'Vikram Reddy', '88, Jubilee Hills, Hyderabad', 1.75, 'Delivered', 'INTRK001235', '2024-09-25'), (3, 'Vikram Reddy', '88, Jubilee Hills, Hyderabad', 'Manoj Singh', '67, MI Road, Jaipur', 3.20, 'In Transit', 'INTRK001236', '2024-10-03'), (4, 'Nisha Patel', '23, SG Highway, Ahmedabad', 'Rajesh Kumar', '12, MG Road, Bengaluru', 4.10, 'Shipped', 'INTRK001237', '2024-10-02'), (5, 'Manoj Singh', '67, MI Road, Jaipur', 'Aditi Sharma', '45, Nehru Nagar, New Delhi', 5.00, 'Pending', 'INTRK001238', '2024-10-05');

```

```

INSERT INTO CourierServices (ServiceID, ServiceName, Cost) VALUES (1, 'Standard Delivery', 100.00), (2, 'Express Delivery', 200.00), (3, 'Same Day Delivery', 300.00), (4, 'Overnight Delivery', 250.00), (5, 'International Delivery', 500.00);

```

```

INSERT INTO Employee (EmployeeID, Name, Email, ContactNumber, Role, Salary) VALUES (1, 'Suresh Bhatia', 'suresh.bhatia@example.com', '9988776655', 'Courier Handler', 25000.00), (2, 'Priya Iyer', 'priya.iyer@example.com', '9877665544', 'Delivery Agent', 22000.00), (3, 'Anil Deshmukh', 'anil.deshmukh@example.com', '9766554433', 'Logistics Manager', 35000.00), (4, 'Neha Kapoor', 'neha.kapoor@example.com', '9655443322', 'Warehouse Supervisor', 27000.00), (5, 'Vivek Jain', 'vivek.jain@example.com', '9544332211', 'Delivery Coordinator', 24000.00);

```

```

INSERT INTO Location (LocationID, LocationName, Address) VALUES (1, 'Bengaluru Warehouse', 'Electronic City, Bengaluru'), (2, 'New Delhi Hub', 'Connaught Place, New Delhi'), (3, 'Hyderabad Sorting Center', 'Begumpet, Hyderabad'), (4, 'Ahmedabad Warehouse', 'SG Highway, Ahmedabad'), (5, 'Jaipur Delivery Center', 'MI Road, Jaipur');

```

```

INSERT INTO Payment (PaymentID, CourierID, LocationID, Amount, PaymentDate) VALUES (1, 1, 1, 100.00, '2024-10-01'), (2, 2, 2, 200.00, '2024-09-25'), (3, 3, 3, 300.00, '2024-10-03'), (4, 4, 4, 250.00, '2024-10-02'), (5, 5, 5, 150.00, '2024-10-05');

```

```

MySQL> select * from User;
+-----+-----+-----+-----+-----+-----+
| UserID | Name   | Email      | Password | ContactNumber | Address          |
+-----+-----+-----+-----+-----+-----+
| 1     | Rajesh Kumar | rajesh.kumar@example.com | Pass@123 | 9876543210 | 12, MG Road, Bengaluru |
| 2     | Aditi Sharma | aditi.sharma@example.com | Secure@123 | 8765432109 | 45, Nehru Nagar, New Delhi |
| 3     | Vikram Reddy | vikram.reddy@example.com | Strong@789 | 7654321098 | 88, Jubilee Hills, Hyderabad |
| 4     | Nisha Patel  | nisha.patel@example.com | Safe@101 | 6543210987 | 23, SG Highway, Ahmedabad |
| 5     | Manoj Singh  | manoj.singh@example.com | Protect@202 | 5432109876 | 67, MI Road, Jaipur |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

MySQL> select * from Courier;
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| CourierID | SenderName | SenderAddress           | ReceiverName | ReceiverAddress           | Weight | Status    | TrackingNumber | DeliveryDate |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| 1     | Rajesh Kumar | 12, MG Road, Bengaluru | Nisha Patel  | 23, SG Highway, Ahmedabad | 2.50  | Shipped   | INTRK001234  | 2024-10-01  |
| 2     | Aditi Sharma | 45, Nehru Nagar, New Delhi | Vikram Reddy | 88, Jubilee Hills, Hyderabad | 1.75  | Delivered  | INTRK001235  | 2024-09-25  |
| 3     | Vikram Reddy | 88, Jubilee Hills, Hyderabad | Manoj Singh  | 67, MI Road, Jaipur       | 3.20  | In Transit | INTRK001236  | 2024-10-03  |
| 4     | Nisha Patel  | 23, SG Highway, Ahmedabad | Rajesh Kumar | 12, MG Road, Bengaluru | 4.10  | Shipped   | INTRK001237  | 2024-10-02  |
| 5     | Manoj Singh  | 67, MI Road, Jaipur       | Aditi Sharma | 45, Nehru Nagar, New Delhi | 5.00  | Pending    | INTRK001238  | 2024-10-05  |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

MySQL> select * from CourierServices;

```

```

+-----+-----+-----+
| ServiceID | ServiceName | Cost |
+-----+-----+-----+
| 1     | Standard Delivery | 100.00 |
| 2     | Express Delivery  | 200.00 |
| 3     | Same Day Delivery | 300.00 |
| 4     | Overnight Delivery | 250.00 |
| 5     | International Delivery | 500.00 |
+-----+-----+-----+
5 rows in set (0.00 sec)

MySQL> select * from Employee;
+-----+-----+-----+-----+-----+-----+
| EmployeeID | Name   | Email      | ContactNumber | Role        | Salary |
+-----+-----+-----+-----+-----+-----+
| 1     | Suresh Bhatia | suresh.bhatia@example.com | 9988776655 | Courier Handler | 25000.00 |
| 2     | Priya Iyer    | priya.iyer@example.com | 9877665544 | Delivery Agent | 22000.00 |
| 3     | Anil Deshmukh | anil.deshmukh@example.com | 9766554433 | Logistics Manager | 35000.00 |
| 4     | Neha Kapoor   | neha.kapoor@example.com | 9655443322 | Warehouse Supervisor | 27000.00 |
| 5     | Vivek Jain   | vivek.jain@example.com | 9544332211 | Delivery Coordinator | 24000.00 |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

MySQL> select * from Location;
+-----+-----+-----+
| LocationID | LocationName | Address          |
+-----+-----+-----+
| 1     | Bengaluru Warehouse | Electronic City, Bengaluru |
| 2     | New Delhi Hub        | Connaught Place, New Delhi |
| 3     | Hyderabad Sorting Center | Begumpet, Hyderabad |
| 4     | Ahmedabad Warehouse  | SG Highway, Ahmedabad |
| 5     | Jaipur Delivery Center | MI Road, Jaipur |
+-----+-----+-----+
5 rows in set (0.00 sec)

MySQL> select * from Payment;

```

```

MySQL> select * from Payment;
+-----+-----+-----+-----+-----+-----+
| PaymentID | CourierID | LocationID | Amount | PaymentDate |
+-----+-----+-----+-----+-----+-----+
| 1     | 1         | 1         | 100.00 | 2024-10-01 |
| 2     | 2         | 2         | 200.00 | 2024-09-25 |
| 3     | 3         | 3         | 300.00 | 2024-10-03 |
| 4     | 4         | 4         | 250.00 | 2024-10-02 |
| 5     | 5         | 5         | 150.00 | 2024-10-05 |
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

```

Devanshu Sharma

## Task 2: Select, Where

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

1. List all customers:
2. List all orders for a specific customer:
3. List all couriers:
4. List all packages for a specific order:
5. List all deliveries for a specific courier:
6. List all undelivered packages:
7. List all packages that are scheduled for delivery today:
8. List all packages with a specific status:
9. Calculate the total number of packages for each courier.
10. Find the average delivery time for each courier
11. List all packages with a specific weight range:
12. Retrieve employees whose names contain 'John'
13. Retrieve all courier records with payments greater than \$50.

## Solution

SELECT \* FROM User;

```
mysql> SELECT * FROM User;
+-----+-----+-----+-----+-----+
| UserID | Name      | Email           | Password        | ContactNumber | Address          |
+-----+-----+-----+-----+-----+
| 1     | Rajesh Kumar | rajesh.kumar@example.com | Pass@123       | 9876543210    | 12, MG Road, Bengaluru
| 2     | Aditi Sharma | aditi.sharma@example.com | Secure@456     | 8765432109    | 45, Nehru Nagar, New Delhi
| 3     | Vikram Reddy | vikram.reddy@example.com | Strong@789     | 7654321098    | 88, Jubilee Hills, Hyderabad
| 4     | Nisha Patel  | nisha.patel@example.com | Safe@101       | 6543210987    | 23, SG Highway, Ahmedabad
| 5     | Manoj Singh  | manoj.singh@example.com | Protect@202    | 5432109876    | 67, MI Road, Jaipur
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

SELECT \* FROM Courier WHERE SenderName = 'Rajesh Kumar';

```
mysql> SELECT * FROM Courier
   >>> WHERE SenderName = 'Rajesh Kumar';
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| CourierID | SenderName | SenderAddress      | ReceiverName | ReceiverAddress | Weight | Status | TrackingNumber | DeliveryDate |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| 1     | Rajesh Kumar | 12, MG Road, Bengaluru | Nisha Patel  | 23, SG Highway, Ahmedabad | 2.50 | Shipped | INTRK001234 | 2024-10-01 |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)

mysql>
```

SELECT \* FROM Courier;

```
mysql> SELECT * FROM Courier;
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| CourierID | SenderName | SenderAddress      | ReceiverName | ReceiverAddress | Weight | Status | TrackingNumber | DeliveryDate |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| 1     | Rajesh Kumar | 12, MG Road, Bengaluru | Nisha Patel  | 23, SG Highway, Ahmedabad | 2.50 | Shipped | INTRK001234 | 2024-10-01
| 2     | Aditi Sharma | 45, Nehru Nagar, New Delhi | Vikram Reddy | 88, Jubilee Hills, Hyderabad | 1.75 | Delivered | INTRK001235 | 2024-09-25
| 3     | Vikram Reddy | 88, Jubilee Hills, Hyderabad | Manoj Singh  | 67, MI Road, Jaipur | 3.20 | In Transit | INTRK001236 | 2024-10-03
| 4     | Nisha Patel  | 23, SG Highway, Ahmedabad | Rajesh Kumar | 12, MG Road, Bengaluru | 4.10 | Shipped | INTRK001237 | 2024-10-02
| 5     | Manoj Singh  | 67, MI Road, Jaipur | Aditi Sharma | 45, Nehru Nagar, New Delhi | 5.00 | Pending | INTRK001238 | 2024-10-05
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql>
```

Devanshu Sharma

```
SELECT * FROM Courier WHERE TrackingNumber = 'INTRK001234';
```

```
mysql> SELECT * FROM Courier
-> WHERE TrackingNumber = 'INTRK001234';
+-----+-----+-----+-----+-----+-----+-----+-----+
| CourierID | SenderName | SenderAddress | ReceiverName | ReceiverAddress | Weight | Status | TrackingNumber | DeliveryDate |
+-----+-----+-----+-----+-----+-----+-----+-----+
| 1 | Rajesh Kumar | 12, MG Road, Bengaluru | Nisha Patel | 23, SG Highway, Ahmedabad | 2.50 | Shipped | INTRK001234 | 2024-10-01 |
+-----+-----+-----+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)

mysql> |
```

```
SELECT * FROM Courier WHERE SenderName = 'Suresh Bhatia';
```

```
mysql> SELECT * FROM Courier WHERE SenderName = 'Manoj Singh';
+-----+-----+-----+-----+-----+-----+-----+-----+
| CourierID | SenderName | SenderAddress | ReceiverName | ReceiverAddress | Weight | Status | TrackingNumber | DeliveryDate |
+-----+-----+-----+-----+-----+-----+-----+-----+
| 5 | Manoj Singh | 67, MI Road, Jaipur | Aditi Sharma | 45, Nehru Nagar, New Delhi | 5.00 | Pending | INTRK001238 | 2024-10-05 |
+-----+-----+-----+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)

mysql> |
```

```
SELECT * FROM Courier WHERE Status != 'Delivered';
```

```
mysql> SELECT * FROM Courier
-> WHERE Status != 'Delivered';
+-----+-----+-----+-----+-----+-----+-----+-----+
| CourierID | SenderName | SenderAddress | ReceiverName | ReceiverAddress | Weight | Status | TrackingNumber | DeliveryDate |
+-----+-----+-----+-----+-----+-----+-----+-----+
| 1 | Rajesh Kumar | 12, MG Road, Bengaluru | Nisha Patel | 23, SG Highway, Ahmedabad | 2.50 | Shipped | INTRK001234 | 2024-10-01 |
| 3 | Vikram Reddy | 88, Jubilee Hills, Hyderabad | Manoj Singh | 67, MI Road, Jaipur | 3.20 | In Transit | INTRK001236 | 2024-10-03 |
| 4 | Nisha Patel | 23, SG Highway, Ahmedabad | Rajesh Kumar | 12, MG Road, Bengaluru | 4.10 | Shipped | INTRK001237 | 2024-10-02 |
| 5 | Manoj Singh | 67, MI Road, Jaipur | Aditi Sharma | 45, Nehru Nagar, New Delhi | 5.00 | Pending | INTRK001238 | 2024-10-05 |
+-----+-----+-----+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)
```

```
SELECT * FROM Courier WHERE DeliveryDate = CURDATE();
```

```
mysql> SELECT * FROM Courier
-> WHERE DeliveryDate = CURDATE();
Empty set (0.03 sec)
```

```
SELECT * FROM Courier WHERE Status = 'In Transit';
```

```
mysql> SELECT * FROM Courier
-> WHERE Status = 'In Transit';
+-----+-----+-----+-----+-----+-----+-----+-----+
| CourierID | SenderName | SenderAddress | ReceiverName | ReceiverAddress | Weight | Status | TrackingNumber | DeliveryDate |
+-----+-----+-----+-----+-----+-----+-----+-----+
| 3 | Vikram Reddy | 88, Jubilee Hills, Hyderabad | Manoj Singh | 67, MI Road, Jaipur | 3.20 | In Transit | INTRK001236 | 2024-10-03 |
+-----+-----+-----+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)
```

```
SELECT COUNT(CourierID) AS TotalPackages FROM Courier;
```

```
mysql> SELECT COUNT(CourierID) AS TotalPackages
-> FROM Courier;
+-----+
| TotalPackages |
+-----+
|      5      |
+-----+
1 row in set (0.05 sec)

mysql> |
```

```
SELECT AVG(DATEDIFF(DeliveryDate, '2024-01-01')) AS AvgDeliveryTime FROM Courier WHERE DeliveryDate IS NOT NULL;
```

```
+-----+
| AvgDeliveryTime |
+-----+
|      274.2000   |
+-----+
1 row in set (0.00 sec)
```

Devanshu Sharma

```
SELECT * FROM Courier WHERE Weight BETWEEN 2.00 AND 5.00;
```

```
mysql> SELECT * FROM Courier
-> WHERE Weight BETWEEN 2.00 AND 5.00;
+-----+-----+-----+-----+-----+-----+-----+
| CourierID | SenderName | SenderAddress | ReceiverName | ReceiverAddress | Weight | Status | TrackingNumber | DeliveryDate
+-----+-----+-----+-----+-----+-----+-----+
| 1 | Rajesh Kumar | 12, MG Road, Bengaluru | Nisha Patel | 23, SG Highway, Ahmedabad | 2.50 | Shipped | INTRK001234 | 2024-10-01
| 3 | Vikram Reddy | 88, Jubilee Hills, Hyderabad | Manoj Singh | 67, MI Road, Jaipur | 3.20 | In Transit | INTRK001236 | 2024-10-03
| 4 | Nisha Patel | 23, SG Highway, Ahmedabad | Rajesh Kumar | 12, MG Road, Bengaluru | 4.10 | Shipped | INTRK001237 | 2024-10-02
| 5 | Manoj Singh | 67, MI Road, Jaipur | Aditi Sharma | 45, Nehru Nagar, New Delhi | 5.00 | Pending | INTRK001238 | 2024-10-05
+-----+-----+-----+-----+-----+-----+-----+
4 rows in set (0.04 sec)
```

```
SELECT * FROM Employee WHERE Name LIKE '%John%';
```

```
mysql> SELECT * FROM Employee
-> WHERE Name LIKE '%John%';
Empty set (0.00 sec)
```

```
mysql> |
```

```
SELECT * FROM Courier WHERE CourierID IN (SELECT CourierID
```

```
FROM Payment
```

```
WHERE Amount > 50
```

```
);
```

```
mysql> SELECT *
-> FROM Courier
-> WHERE CourierID IN (
->   SELECT CourierID
->   FROM Payment
->   WHERE Amount > 50
-> );
+-----+-----+-----+-----+-----+-----+-----+
| CourierID | SenderName | SenderAddress | ReceiverName | ReceiverAddress | Weight | Status | TrackingNumber | DeliveryDate
+-----+-----+-----+-----+-----+-----+-----+
| 1 | Rajesh Kumar | 12, MG Road, Bengaluru | Nisha Patel | 23, SG Highway, Ahmedabad | 2.50 | Shipped | INTRK001234 | 2024-10-01
| 2 | Aditi Sharma | 45, Nehru Nagar, New Delhi | Vikram Reddy | 88, Jubilee Hills, Hyderabad | 1.75 | Delivered | INTRK001235 | 2024-09-25
| 3 | Vikram Reddy | 88, Jubilee Hills, Hyderabad | Manoj Singh | 67, MI Road, Jaipur | 3.20 | In Transit | INTRK001236 | 2024-10-03
| 4 | Nisha Patel | 23, SG Highway, Ahmedabad | Rajesh Kumar | 12, MG Road, Bengaluru | 4.10 | Shipped | INTRK001237 | 2024-10-02
| 5 | Manoj Singh | 67, MI Road, Jaipur | Aditi Sharma | 45, Nehru Nagar, New Delhi | 5.00 | Pending | INTRK001238 | 2024-10-05
+-----+-----+-----+-----+-----+-----+-----+
5 rows in set (0.01 sec)
```

## Task 3: Group By, Aggregate Functions, Having, Order By, where

14. Find the total number of couriers handled by each employee.
15. Calculate the total revenue generated by each location
16. Find the total number of couriers delivered to each location.
17. Find the courier with the highest average delivery time:
18. Find Locations with Total Payments Less Than a Certain Amount
19. Calculate Total Payments per Location
20. Retrieve couriers who have received payments totaling more than \$1000 in a specific location  
(LocationID = X):
21. Retrieve couriers who have received payments totaling more than \$1000 after a certain date  
(PaymentDate > 'YYYY-MM-DD'):
22. Retrieve locations where the total amount received is more than \$5000 before a certain date  
(PaymentDate > 'YYYY-MM-DD')

## Solution

```
SELECT p.LocationID, COUNT(DISTINCT c.CourierID) AS TotalCouriers FROM Payment p JOIN Courier c ON p.CourierID = c.CourierID GROUP BY p.LocationID;
```

```
+-----+-----+
| LocationID | TotalCouriers |
+-----+-----+
|      1      |          1          |
|      2      |          1          |
|      3      |          1          |
|      4      |          1          |
|      5      |          1          |
+-----+-----+
5 rows in set (0.01 sec)

mysql> |
```

```
SELECT LocationID, SUM(Amount) AS TotalRevenue FROM Payment GROUP BY LocationID;
```

```
mysql> SELECT LocationID, SUM(Amount) AS TotalRevenue FROM Payment GROUP BY LocationID;
+-----+-----+
| LocationID | TotalRevenue |
+-----+-----+
|      1 |     100.00 |
|      2 |     200.00 |
|      3 |     300.00 |
|      4 |     250.00 |
|      5 |     150.00 |
+-----+-----+
5 rows in set (0.00 sec)
```

```
SELECT c.ReceiverAddress AS Location, COUNT(c.CourierID) AS TotalCouriersDelivered FROM Courier c
GROUP BY c.ReceiverAddress;
```

```
+-----+-----+
| Location | TotalCouriersDelivered |
+-----+-----+
| 23, SG Highway, Ahmedabad | 1 |
| 88, Jubilee Hills, Hyderabad | 1 |
| 67, MI Road, Jaipur | 1 |
| 12, MG Road, Bengaluru | 1 |
| 45, Nehru Nagar, New Delhi | 1 |
+-----+-----+
5 rows in set (0.00 sec)
```

```
SELECT CourierID, AVG(DATEDIFF(DeliveryDate, '2024-01-01')) AS AvgDeliveryTime FROM Courier
GROUP BY CourierID ORDER BY AvgDeliveryTime DESC;
```

```
+-----+-----+
| CourierID | AvgDeliveryTime |
+-----+-----+
|      5 |     278.0000 |
+-----+-----+
1 row in set (0.00 sec)
```

```
SELECT LocationID, SUM(Amount) AS TotalPayments FROM Payment GROUP BY LocationID HAVING
TotalPayments < 500;
```

```
+-----+-----+
| LocationID | TotalPayments |
+-----+-----+
|      1 |     100.00 |
|      2 |     200.00 |
|      3 |     300.00 |
|      4 |     250.00 |
|      5 |     150.00 |
+-----+-----+
5 rows in set (0.00 sec)
```

```
SELECT LocationID, SUM(Amount) AS TotalPayments FROM Payment GROUP BY LocationID;
```

LocationID	TotalPayments
1	100.00
2	200.00
3	300.00
4	250.00
5	150.00

5 rows in set (0.00 sec)

```
SELECT c.CourierID, SUM(p.Amount) AS TotalPayments, l.LocationName FROM Courier c JOIN Payment p ON c.CourierID = p.CourierID JOIN Location l ON p.LocationID = l.LocationID WHERE l.LocationID = 1 GROUP BY c.CourierID, l.LocationName HAVING TotalPayments > 1000;
```

```
Empty set (0.01 sec)
```

```
SELECT c.CourierID, SUM(p.Amount) AS TotalPayments FROM Courier c JOIN Payment p ON c.CourierID = p.CourierID WHERE p.PaymentDate > '2024-10-02' WHERE GROUP BY c.CourierID HAVING TotalPayments > 1000;
```

mysql> select * from Payment;					
PaymentID	CourierID	LocationID	Amount	PaymentDate	
1	1	1	100.00	2024-10-01	
2	2	2	200.00	2024-09-25	
3	3	3	300.00	2024-10-03	
4	4	4	250.00	2024-10-02	
5	5	5	150.00	2024-10-05	

5 rows in set (0.00 sec)

```
mysql> select * from Payment;
```

```
Empty set (0.00 sec)
```

```
mysql> |
```

```
SELECT p.LocationID, SUM(p.Amount) AS TotalReceived FROM Payment p WHERE p.PaymentDate < '2024-01-01' GROUP BY p.LocationID HAVING TotalReceived > 5000;
```

```
Empty set (0.00 sec)
```

## Task 4: Inner Join, Full Outer Join, Cross Join, Left Outer Join, Right Outer Join

```
SELECT p.PaymentID, p.Amount, c.CourierID, c.SenderName, c.ReceiverName FROM Payment p LEFT JOIN Courier c ON p.CourierID = c.CourierID;
```

PaymentID	Amount	CourierID	SenderName	ReceiverName
1	100.00	1	Rajesh Kumar	Nisha Patel
2	200.00	2	Aditi Sharma	Vikram Reddy
3	300.00	3	Vikram Reddy	Manoj Singh
4	250.00	4	Nisha Patel	Rajesh Kumar
5	150.00	5	Manoj Singh	Aditi Sharma

5 rows in set (0.00 sec)

```
SELECT p.PaymentID, p.Amount, l.LocationName FROM Payment p LEFT JOIN Location l ON p.LocationID = l.LocationID;
```

PaymentID	Amount	LocationName
1	100.00	Bengaluru Warehouse
2	200.00	New Delhi Hub
3	300.00	Hyderabad Sorting Center
4	250.00	Ahmedabad Warehouse
5	150.00	Jaipur Delivery Center

5 rows in set (0.00 sec)

mysql> |

```
SELECT c.CourierID, SUM(p.Amount) AS TotalPayments FROM Payment p INNER JOIN Courier c ON p.CourierID = c.CourierID GROUP BY c.CourierID;
```

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

5 rows in set (0.00 sec)

```
SELECT p.PaymentID, p.Amount FROM Payment p WHERE p.PaymentDate BETWEEN '2024-10-02' AND '2024-10-10';
```

```
mysql> SELECT p.PaymentID, p.Amount FROM Payment p WHERE p.PaymentDate BETWEEN '2024-10-02' AND '2024-10-10';
+-----+-----+
| PaymentID | Amount |
+-----+-----+
|      3 | 300.00 |
|      4 | 250.00 |
|      5 | 150.00 |
+-----+-----+
3 rows in set (0.00 sec)
```

```
SELECT u.UserID, u.Name, c.CourierID, c.SenderName, c.ReceiverName FROM User u LEFT JOIN Courier c ON u.Name = c.SenderName OR u.Name = c.ReceiverName;
```

```
+-----+-----+-----+-----+-----+
| UserID | Name          | CourierID | SenderName   | ReceiverName |
+-----+-----+-----+-----+-----+
|     1 | Rajesh Kumar    |         4 | Nisha Patel  | Rajesh Kumar  |
|     1 | Rajesh Kumar    |         1 | Rajesh Kumar | Nisha Patel   |
|     2 | Aditi Sharma    |         5 | Manoj Singh  | Aditi Sharma  |
|     2 | Aditi Sharma    |         2 | Aditi Sharma | Vikram Reddy |
|     3 | Vikram Reddy    |         3 | Vikram Reddy | Manoj Singh   |
|     3 | Vikram Reddy    |         2 | Aditi Sharma | Vikram Reddy |
|     4 | Nisha Patel     |         4 | Nisha Patel  | Rajesh Kumar  |
|     4 | Nisha Patel     |         1 | Rajesh Kumar | Nisha Patel   |
|     5 | Manoj Singh     |         5 | Manoj Singh  | Aditi Sharma  |
|     5 | Manoj Singh     |         3 | Vikram Reddy | Manoj Singh   |
+-----+-----+-----+-----+-----+
10 rows in set (0.00 sec)
```

```
SELECT c.CourierID, cs.ServiceID, cs.ServiceName FROM Courier c LEFT JOIN CourierServices cs ON c.CourierID = cs.ServiceID;
```

```
+-----+-----+-----+
| CourierID | ServiceID | ServiceName |
+-----+-----+-----+
|       1 |         1 | Standard Delivery |
|       2 |         2 | Express Delivery   |
|       3 |         3 | Same Day Delivery |
|       4 |         4 | Overnight Delivery |
|       5 |         5 | International Delivery |
+-----+-----+-----+
5 rows in set (0.00 sec)
```

```
SELECT e.EmployeeID, e.Name, p.PaymentID, p.Amount FROM Employee e CROSS JOIN Payment p;
```

EmployeeID	Name	PaymentID	Amount
5	Vivek Jain	1	100.00
4	Neha Kapoor	1	100.00
3	Anil Deshmukh	1	100.00
2	Priya Iyer	1	100.00
1	Suresh Bhatia	1	100.00
5	Vivek Jain	2	200.00
4	Neha Kapoor	2	200.00
3	Anil Deshmukh	2	200.00
2	Priya Iyer	2	200.00
1	Suresh Bhatia	2	200.00
5	Vivek Jain	3	300.00
4	Neha Kapoor	3	300.00
3	Anil Deshmukh	3	300.00
2	Priya Iyer	3	300.00
1	Suresh Bhatia	3	300.00
5	Vivek Jain	4	250.00
4	Neha Kapoor	4	250.00
3	Anil Deshmukh	4	250.00
2	Priya Iyer	4	250.00
1	Suresh Bhatia	4	250.00
5	Vivek Jain	5	150.00
4	Neha Kapoor	5	150.00
3	Anil Deshmukh	5	150.00
2	Priya Iyer	5	150.00
1	Suresh Bhatia	5	150.00

```
SELECT u.UserID, u.Name, cs.ServiceID, cs.ServiceName FROM User u CROSS JOIN CourierServices cs;
```

UserID	Name	ServiceID	ServiceName
5	Manoj Singh	1	Standard Delivery
4	Nisha Patel	1	Standard Delivery
3	Vikram Reddy	1	Standard Delivery
2	Aditi Sharma	1	Standard Delivery
1	Rajesh Kumar	1	Standard Delivery
5	Manoj Singh	2	Express Delivery
4	Nisha Patel	2	Express Delivery
3	Vikram Reddy	2	Express Delivery
2	Aditi Sharma	2	Express Delivery
1	Rajesh Kumar	2	Express Delivery
5	Manoj Singh	3	Same Day Delivery
4	Nisha Patel	3	Same Day Delivery
3	Vikram Reddy	3	Same Day Delivery
2	Aditi Sharma	3	Same Day Delivery
1	Rajesh Kumar	3	Same Day Delivery
5	Manoj Singh	4	Overnight Delivery
4	Nisha Patel	4	Overnight Delivery
3	Vikram Reddy	4	Overnight Delivery
2	Aditi Sharma	4	Overnight Delivery
1	Rajesh Kumar	4	Overnight Delivery
5	Manoj Singh	5	International Delivery
4	Nisha Patel	5	International Delivery
3	Vikram Reddy	5	International Delivery
2	Aditi Sharma	5	International Delivery
1	Rajesh Kumar	5	International Delivery

SELECT e.EmployeeID, e.Name, l.LocationID, l.LocationName FROM Employee e CROSS JOIN Location l;

EmployeeID	Name	LocationID	LocationName
5	Vivek Jain	1	Bengaluru Warehouse
4	Neha Kapoor	1	Bengaluru Warehouse
3	Anil Deshmukh	1	Bengaluru Warehouse
2	Priya Iyer	1	Bengaluru Warehouse
1	Suresh Bhatia	1	Bengaluru Warehouse
5	Vivek Jain	2	New Delhi Hub
4	Neha Kapoor	2	New Delhi Hub
3	Anil Deshmukh	2	New Delhi Hub
2	Priya Iyer	2	New Delhi Hub
1	Suresh Bhatia	2	New Delhi Hub
5	Vivek Jain	3	Hyderabad Sorting Center
4	Neha Kapoor	3	Hyderabad Sorting Center
3	Anil Deshmukh	3	Hyderabad Sorting Center
2	Priya Iyer	3	Hyderabad Sorting Center
1	Suresh Bhatia	3	Hyderabad Sorting Center
5	Vivek Jain	4	Ahmedabad Warehouse
4	Neha Kapoor	4	Ahmedabad Warehouse
3	Anil Deshmukh	4	Ahmedabad Warehouse
2	Priya Iyer	4	Ahmedabad Warehouse
1	Suresh Bhatia	4	Ahmedabad Warehouse
5	Vivek Jain	5	Jaipur Delivery Center
4	Neha Kapoor	5	Jaipur Delivery Center
3	Anil Deshmukh	5	Jaipur Delivery Center
2	Priya Iyer	5	Jaipur Delivery Center
1	Suresh Bhatia	5	Jaipur Delivery Center

```
SELECT c.CourierID, c.SenderName, c.SenderAddress FROM Courier c;
```

```
mysql> SELECT
    ->     c.CourierID,
    ->     c.SenderName,
    ->     c.SenderAddress
    -> FROM
    ->     Courier c;
+-----+-----+-----+
| CourierID | SenderName | SenderAddress
+-----+-----+-----+
|      1 | Rajesh Kumar | 12, MG Road, Bengaluru
|      2 | Aditi Sharma | 45, Nehru Nagar, New Delhi
|      3 | Vikram Reddy | 88, Jubilee Hills, Hyderabad
|      4 | Nisha Patel  | 23, SG Highway, Ahmedabad
|      5 | Manoj Singh  | 67, MI Road, Jaipur
+-----+-----+-----+
5 rows in set (0.00 sec)
```

```
SELECT c.CourierID, c.ReceiverName, c.ReceiverAddress FROM Courier c;
```

```
+-----+-----+-----+
| CourierID | ReceiverName | ReceiverAddress
+-----+-----+-----+
|      1 | Nisha Patel  | 23, SG Highway, Ahmedabad
|      2 | Vikram Reddy | 88, Jubilee Hills, Hyderabad
|      3 | Manoj Singh  | 67, MI Road, Jaipur
|      4 | Rajesh Kumar | 12, MG Road, Bengaluru
|      5 | Aditi Sharma | 45, Nehru Nagar, New Delhi
+-----+-----+-----+
5 rows in set (0.00 sec)
```

```
SELECT c.CourierID, cs.ServiceName FROM Courier c CROSS JOIN CourierServices cs;
```

CourierID	ServiceName
5	Standard Delivery
4	Standard Delivery
3	Standard Delivery
2	Standard Delivery
1	Standard Delivery
5	Express Delivery
4	Express Delivery
3	Express Delivery
2	Express Delivery
1	Express Delivery
5	Same Day Delivery
4	Same Day Delivery
3	Same Day Delivery
2	Same Day Delivery
1	Same Day Delivery
5	Overnight Delivery
4	Overnight Delivery
3	Overnight Delivery
2	Overnight Delivery
1	Overnight Delivery
5	International Delivery
4	International Delivery
3	International Delivery
2	International Delivery
1	International Delivery

25 rows in set (0.00 sec)

```
SELECT e.EmployeeID, e.Name FROM Employee e;
```

EmployeeID	Name
1	Suresh Bhatia
2	Priya Iyer
3	Anil Deshmukh
4	Neha Kapoor
5	Vivek Jain

5 rows in set (0.00 sec)

Devanshu Sharma

```
SELECT l.LocationID, l.LocationName, SUM(p.Amount) AS TotalPayments FROM Location l LEFT JOIN Payment p ON l.LocationID = p.LocationID GROUP BY l.LocationID;
```

LocationID	LocationName	TotalPayments
1	Bengaluru Warehouse	100.00
2	New Delhi Hub	200.00
3	Hyderabad Sorting Center	300.00
4	Ahmedabad Warehouse	250.00
5	Jaipur Delivery Center	150.00

5 rows in set (0.00 sec)

```
SELECT c1.CourierID, c1.SenderName FROM Courier c1 WHERE c1.SenderName IN (SELECT SenderName FROM Courier c2 WHERE c1.SenderName = c2.SenderName);
```

CourierID	SenderId
1	Rajesh Kumar
2	Aditi Sharma
3	Vikram Reddy
4	Nisha Patel
5	Manoj Singh

5 rows in set (0.01 sec)

```
mysql> SELECT
    ->     e1.EmployeeID,
    ->     e1.Name,
    ->     e1.Role
    -> FROM
    ->     Employee e1
    -> WHERE
    ->     e1.Role IN (SELECT e2.Role FROM Employee e2 GROUP BY e2.Role HAVING COUNT(*) > 1);
Empty set (0.04 sec)
```

```
SELECT c1.CourierID, c1.SenderAddress FROM Courier c1 WHERE c1.SenderAddress IN (SELECT SenderAddress FROM Courier c2 WHERE c1.c2.SenderAddress);
```

CourierID	SenderId
1	12, MG Road, Bengaluru
2	45, Nehru Nagar, New Delhi
3	88, Jubilee Hills, Hyderabad
4	23, SG Highway, Ahmedabad
5	67, MI Road, Jaipur

5 rows in set (0.00 sec)

```
SELECT c.CourierID FROM Courier c JOIN Payment p ON c.CourierID = p.CourierID WHERE p.Amount > 50;
```

CourierID
1
2
3
4
5

5 rows in set (0.00 sec)

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

CourierID	Weight
4	4.10
5	5.00

2 rows in set (0.00 sec)

```
mysql> SELECT Name FROM Employee WHERE Salary > (SELECT AVG(Salary) FROM Employee);
```

Name
Anil Deshmukh
Neha Kapoor

2 rows in set (0.00 sec)

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

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

TotalCost
850.00

1 row in set (0.00 sec)

```
SELECT c.CourierID FROM Courier c JOIN Payment p ON c.CourierID = p.CourierID;
```

```
mysql> SELECT c.CourierID FROM Courier c JOIN Payment p ON c.CourierID = p.CourierID;
+-----+
| CourierID |
+-----+
|      1 |
|      2 |
|      3 |
|      4 |
|      5 |
+-----+
5 rows in set (0.00 sec)
```

```
SELECT LocationID FROM Payment WHERE Amount = (SELECT MAX(Amount) FROM Payment);
```

```
mysql> SELECT LocationID FROM Payment WHERE Amount = (SELECT MAX(Amount) FROM Payment);
+-----+
| LocationID |
+-----+
|      3 |
+-----+
1 row in set (0.00 sec)
```

```
SELECT CourierID, Weight FROM Courier WHERE Weight > (SELECT MAX(Weight) FROM Courier WHERE SenderName = 'SenderName');
```

```
Empty set (0.00 sec)
```

## ER Diagram

