

ASSIGNMENT - 4

a Courier Management System with tables for Customers, Couriers, Orders, and Parcels.

TASK -1 DATABASE DESIGN

1) Define the Database Schema • Create SQL tables for entities such as User, Courier, Employee etc.

User

```
mysql> CREATE TABLE User(  
-> UserID INT PRIMARY KEY,  
-> Name VARCHAR(255),  
-> Email VARCHAR(255) UNIQUE,  
-> Password VARCHAR(255),  
-> ContactNumber VARCHAR(20),  
-> Address TEXT  
-> );
```

Courier

```
mysql> 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  
-> );
```

CourierServices

```
mysql> CREATE TABLE CourierServices(  
-> ServiceID INT PRIMARY KEY,  
-> ServiceName VARCHAR(100),  
-> Cost DECIMAL(8, 2)  
-> );
```

Employee

```
mysql> CREATE TABLE Employee(  
-> EmployeeID INT PRIMARY KEY,  
-> Name VARCHAR(255),  
-> Email VARCHAR(255) UNIQUE,  
-> ContactNumber VARCHAR(20),  
-> Role VARCHAR(50),  
-> Salary DECIMAL(10, 2)  
-> );
```

Location

```
mysql> CREATE TABLE Location(  
-> LocationID INT PRIMARY KEY,  
-> LocationName VARCHAR(100),  
-> Address TEXT  
-> );
```

Payment

```
mysql> 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)  
-> );
```

2) Insert sample data into the tables to simulate real-world scenarios.

User

UserID	Name	Email	Password	ContactNumber	Address
1	Aarav Kumar	aarav@gmail.com	pass123	9876543210	12, ABC Colony, New Delhi
2	Sanya Singh	sanya@gmail.com	pass456	8765432109	34, XYZ Street, Mumbai
3	Vivan Patel	vivan@gmail.com	pass789	7654321098	56, PQR Road, Bengaluru
4	Diya Sharma	diya@gmail.com	passabc	6543210987	78, LMN Avenue, Kolkata
5	Advik Gupta	advik@gmail.com	passdef	5432109876	90, EFG Lane, Chennai

Courier

CourierID	SenderName	SenderAddress	ReceiverName	ReceiverAddress	Weight	Status	Tracking
101	Rahul Verma	12, ABC Colony, New Delhi	Priya Singh	34, XYZ Street, Mumbai	2.50	In Transit	TRACK001
102	Neha Sharma	56, PQR Road, Bengaluru	Ajay Kumar	78, LMN Avenue, Kolkata	3.10	Pending	TRACK002
103	Kriti Patel	90, EFG Lane, Chennai	Anjun Gupta	23, RST Gardens, Hyderabad	1.80	Delivered	TRACK003
104	Vivek Singh	45, UVW Street, Pune	Shreya Mishra	67, GHI Enclave, Ahmedabad	2.90	In Transit	TRACK004
105	Ananya Reddy	89, JKL Lane, Jaipur	Rohan Kapoor	10, MNO Road, Chandigarh	2.30	Delivered	TRACK005

CourierServices

ServiceID	ServiceName	Cost
201	Express Service	299.90
202	Local Delivery	199.99
203	Instant Shipping	149.99
204	Night Delivery	249.99
205	International Shipping	399.99

Employee

EmployeeID	Name	Email	ContactNumber	Role	Salary
301	Rohit Sharma	rohit@gmail.com	9876543210	Manager	70000.00
302	Priya Patel	priya@gmail.com	8765432109	Supervisor	60000.00
303	Anjali Singh	anjali@gmail.com	7654321098	Delivery Driver	50000.00
304	Amit Kumar	amit@gmail.com	6543210987	Customer Service	55000.00
305	Neha Gupta	neha@gmail.com	5432109876	Logistics Coordinator	65000.00

Location

LocationID	LocationName	Address
401	New Delhi	New Delhi, Delhi, India
402	Mumbai	Mumbai, Maharashtra, India
403	Bengaluru	Bengaluru, Karnataka, India
404	Kolkata	Kolkata, West Bengal, India
405	Chennai	Chennai, Tamil Nadu, India

Payment

PaymentID	CourierID	LocationId	Amount	PaymentDate
501	101	401	150.00	2023-12-01
502	102	402	170.00	2023-12-02
503	103	403	245.00	2023-12-03
504	104	404	155.00	2023-12-04
505	105	405	260.00	2023-12-05

TASK-2 SELECT , WHERE

1) List all Customers.

UserID	Name	Email	Password	ContactNumber	Address
1	Aarav Kumar	aarav@gmail.com	pass123	9876543210	12, ABC Colony, New Delhi
2	Sanya Singh	sanya@gmail.com	pass456	8765432109	34, XYZ Street, Mumbai
3	Vivan Patel	vivan@gmail.com	pass789	7654321098	56, PQR Road, Bengaluru
4	Diya Sharma	diya@gmail.com	passabc	6543210987	78, LMN Avenue, Kolkata
5	Advik Gupta	advik@gmail.com	passdef	5432109876	90, EFG Lane, Chennai

2) List all orders for a specific customer:

CourierID	SenderName	SenderAddress	ReceiverName	ReceiverAddress	Weight	Status	TrackingNumber	DeliveryDate
102	Neha Sharma	56, PQR Road, Bengaluru	Ajay Kumar	78, LMN Avenue, Kolkata	3.10	Pending	TRACK002	2023-12-18

3) List all couriers .

CourierID	SenderName	SenderAddress	ReceiverName	ReceiverAddress	Weight	Status	TrackingNumber
101	Rahul Verma	12, ABC Colony, New Delhi	Priya Singh	34, XYZ Street, Mumbai	2.50	In Transit	TRACK001
102	Neha Sharma	56, PQR Road, Bengaluru	Ajay Kumar	78, LMN Avenue, Kolkata	3.10	Pending	TRACK002
103	Kriti Patel	90, EFG Lane, Chennai	Anjun Gupta	23, RST Gardens, Hyderabad	1.80	Delivered	TRACK003
104	Vivek Singh	45, UVW Street, Pune	Shreya Mishra	67, GHI Enclave, Ahmedabad	2.90	In Transit	TRACK004
105	Ananya Reddy	89, JKL Lane, Jaipur	Rohan Kapoor	10, MNO Road, Chandigarh	2.30	Delivered	TRACK005

4) List all packages for a specific order:

CourierID	SenderName	SenderAddress	ReceiverName	ReceiverAddress	Weight	Status	TrackingNumber
101	Rahul Verma	12, ABC Colony, New Delhi	Priya Singh	34, XYZ Street, Mumbai	2.50	In Transit	TRACK001

5) . List all deliveries for a specific courier.

CourierID	SenderName	SenderAddress	ReceiverName	ReceiverAddress	Weight	Status	TrackingNumber	DeliveryDate
105	Ananya Reddy	89, JKL Lane, Jaipur	Rohan Kapoor	10, MNO Road, Chandigarh	2.30	Delivered	TRACK005	2023-12-14

6) List all undelivered packages.

CourierID	TrackingNumber	status
101	TRACK001	In Transit
102	TRACK002	Pending
104	TRACK004	In Transit

7) List all packages that are scheduled for delivery today.

CourierID	TrackingNumber	deliverydate
103	TRACK003	2023-12-12

8) List all packages with a specific status.

CourierID	SenderName	SenderAddress	ReceiverName	ReceiverAddress	Weight	Status	TrackingNumber	DeliveryDate
101	Rahul Verma	12, ABC Colony, New Delhi	Priya Singh	34, XYZ Street, Mumbai	2.50	In Transit	TRACK001	2023-12-15
104	Vivek Singh	45, UVW Street, Pune	Shreya Mishra	67, GHI Enclave, Ahmedabad	2.90	In Transit	TRACK004	2023-12-16

9) Find the average delivery time for each courier

CourierID	AverageDeliveryTime
101	14.0000
102	16.0000
103	9.0000
104	12.0000
105	9.0000

10) List all packages with a specific weight range.

CourierID	SenderName	ReceiverName	DeliveryDate	weight
105	Ananya Reddy	Rohan Kapoor	2023-12-14	2.30

11) Retrieve employees whose names contain 'John'.

```
mysql> select * from employee where Name like '%John%';  
Empty set (0.00 sec)
```

12) Retrieve all courier records with payments greater than \$50.

SenderName	ReceiverName	weight	status	TrackingNumber	DeliveryDate	Amount
Rahul Verma	Priya Singh	2.50	In Transit	TRACK001	2023-12-15	150.00
Neha Sharma	Ajay Kumar	3.10	Pending	TRACK002	2023-12-18	170.00
Kriti Patel	Arjun Gupta	1.80	Delivered	TRACK003	2023-12-12	245.00
Vivek Singh	Shreya Mishra	2.90	In Transit	TRACK004	2023-12-16	155.00
Ananya Reddy	Rohan Kapoor	2.30	Delivered	TRACK005	2023-12-14	260.00

TASK 3: GROUPBY, AGGREGATE FUNCTIONS, HAVING, ORDER BY, WHERE

1). Calculate the total revenue generated by each location.

LocationID	LocationName	TotalRevenue
401	New Delhi	150.00
402	Mumbai	170.00
403	Bengaluru	245.00
404	Kolkata	155.00
405	Chennai	260.00

2) Find the total number of couriers delivered to each location.

LocationName	count courier perlocation
New Delhi	1
Mumbai	1
Bengaluru	1
Kolkata	1
Chennai	1

3) Find the courier with the highest average delivery time.

CourierID	AverageDeliveryTime
102	16.0000

4) Find Locations with Total Payments Less Than a Certain Amount .

amount less than 245	locationName
150.00	New Delhi
170.00	Mumbai
155.00	Kolkata

5) Calculate Total Payments per Location.

sum	locationname
150.00	New Delhi
170.00	Mumbai
245.00	Bengaluru
155.00	Kolkata
260.00	Chennai

6) Retrieve couriers who have received payments totaling more than \$1000 in a specific location (LocationID = 405).

```
mysql> select p.Amount , p.courierID from payment p where p.Amount>1000 and p.locationID = 405;  
Empty set (0.00 sec)
```

7) Retrieve couriers who have received payments totaling more than \$150 after a certain date (PaymentDate > '2023-12-02')

Amount	courierID
245.00	103
155.00	104
260.00	105

8) Retrieve locations where the total amount received is more than \$200 before a certain date (PaymentDate > '2023-12-05').

Amount	courierID
150.00	101
170.00	102
155.00	104

TASK 4: INNER JOIN, FULL OUTER JOIN, CROSS JOIN, LEFT OUTER JOIN, RIGHT OUTER JOIN

1) Retrieve Payments with Courier Information .

PaymentID	CourierID	LocationID	Amount	PaymentDate	CourierID	SenderName	SenderAddress	ReceiverName	R
ReceiverAddress	Weight	Status	TrackingNumber	DeliveryDate					
501	101	401	150.00	2023-12-01	101	Rahul Verma	12, ABC Colony, New Delhi	Priya Singh	3
4, XYZ Street, Mumbai	2.50	In Transit	TRACK001	2023-12-15					
502	102	402	170.00	2023-12-02	102	Neha Sharma	56, PQR Road, Bengaluru	Ajay Kumar	7
8, LMN Avenue, Kolkata	3.10	Pending	TRACK002	2023-12-18					
503	103	403	245.00	2023-12-03	103	Kriti Patel	90, EFG Lane, Chennai	Arjun Gupta	2
3, RST Gardens, Hyderabad	1.80	Delivered	TRACK003	2023-12-12					
504	104	404	155.00	2023-12-04	104	Vivek Singh	45, UVW Street, Pune	Shreya Mishra	6
7, GHI Enclave, Ahmedabad	2.90	In Transit	TRACK004	2023-12-16					
505	105	405	260.00	2023-12-05	105	Ananya Reddy	89, JKL Lane, Jaipur	Rohan Kapoor	1
0, MNO Road, Chandigarh	2.30	Delivered	TRACK005	2023-12-14					

2) Retrieve Payments with Location Information.

PaymentID	CourierID	LocationID	Amount	PaymentDate	LocationID	LocationName	Address
501	101	401	150.00	2023-12-01	401	New Delhi	New Delhi, Delhi, India
502	102	402	170.00	2023-12-02	402	Mumbai	Mumbai, Maharashtra, India
503	103	403	245.00	2023-12-03	403	Bengaluru	Bengaluru, Karnataka, India
504	104	404	155.00	2023-12-04	404	Kolkata	Kolkata, West Bengal, India
505	105	405	260.00	2023-12-05	405	Chennai	Chennai, Tamil Nadu, India

3) Retrieve Payments with Courier and Location Information.

amount	CourierId	SenderName	receiverName	LocationName
150.00	101	Rahul Verma	Priya Singh	New Delhi
170.00	102	Neha Sharma	Ajay Kumar	Mumbai
245.00	103	Kriti Patel	Arjun Gupta	Bengaluru
155.00	104	Vivek Singh	Shreya Mishra	Kolkata
260.00	105	Ananya Reddy	Rohan Kapoor	Chennai

4) List all payments with courier details.

Amount	courierID	SenderName	ReceiverName	status	weight
150.00	101	Rahul Verma	Priya Singh	In Transit	2.50
170.00	102	Neha Sharma	Ajay Kumar	Pending	3.10
245.00	103	Kriti Patel	Arjun Gupta	Delivered	1.80
155.00	104	Vivek Singh	Shreya Mishra	In Transit	2.90
260.00	105	Ananya Reddy	Rohan Kapoor	Delivered	2.30

5) Total payments received for each courier.

CourierID	TotalPaymentsReceived
101	150.00
102	170.00
103	245.00
104	155.00
105	260.00

6) List payments made on a specific date.

PaymentID	CourierID	LocationId	Amount	PaymentDate
505	105	405	260.00	2023-12-05

7) Get Courier Information for Each Payment.

payment amount	paymentID	CourierID	SenderName	ReceiverName	status	weight	DeliveryDate
150.00	501	101	Rahul Verma	Priya Singh	In Transit	2.50	2023-12-15
170.00	502	102	Neha Sharma	Ajay Kumar	Pending	3.10	2023-12-18
245.00	503	103	Kriti Patel	Arjun Gupta	Delivered	1.80	2023-12-12
155.00	504	104	Vivek Singh	Shreya Mishra	In Transit	2.90	2023-12-16
260.00	505	105	Ananya Reddy	Rohan Kapoor	Delivered	2.30	2023-12-14

8) Get Payment Details with Location .

PaymentId	amount	paymentDate	LocationName
501	150.00	2023-12-01	New Delhi
502	170.00	2023-12-02	Mumbai
503	245.00	2023-12-03	Bengaluru
504	155.00	2023-12-04	Kolkata
505	260.00	2023-12-05	Chennai

9) Calculating Total Payments for Each Courier.

CourierID	TotalPayments
101	150.00
102	170.00
103	245.00
104	155.00
105	260.00

10) List Payments Within a Date Range .

PaymentID	CourierID	LocationId	Amount	PaymentDate
501	101	401	150.00	2023-12-01
502	102	402	170.00	2023-12-02
503	103	403	245.00	2023-12-03
504	104	404	155.00	2023-12-04

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

```
mysql> select u.name,c.CourierID,c.SenderName,c.ReceiverName,c.status from user u cross join courier c limit 5;
```

name	CourierID	SenderName	ReceiverName	status
Advik Gupta	101	Rahul Verma	Priya Singh	In Transit
Diya Sharma	101	Rahul Verma	Priya Singh	In Transit
Vivan Patel	101	Rahul Verma	Priya Singh	In Transit
Sanya Singh	101	Rahul Verma	Priya Singh	In Transit
Aarav Kumar	101	Rahul Verma	Priya Singh	In Transit

5 rows in set (0.00 sec)

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

```
mysql> SELECT DISTINCT cs.ServiceName , c.SenderName , c.Receivename FROM Courier c CROSS JOIN CourierServices cs limit 5;
```

ServiceName	SenderName	Receivename
Express Service	Ananya Reddy	Rohan Kapoor
Express Service	Vivek Singh	Shreya Mishra
Express Service	Kriti Patel	Anjun Gupta
Express Service	Neha Sharma	Ajay Kumar
Express Service	Rahul Verma	Priya Singh

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

EmployeeID	Name	paymentID	Amount
301	Rohit Sharma	505	260.00
301	Rohit Sharma	504	155.00
301	Rohit Sharma	503	245.00
301	Rohit Sharma	502	170.00
301	Rohit Sharma	501	150.00

14) List all users and all courier services, showing all possible combinations.

UserID	Name	Email	Password	ContactNumber	Address	ServiceID	ServiceName	Cost
5	Advik Gupta	advik@gmail.com	passdef	5432109876	90, EFG Lane, Chennai	201	Express Service	299.90
4	Diya Sharma	diya@gmail.com	passabc	6543210987	78, LMN Avenue, Kolkata	201	Express Service	299.90
3	Vivan Patel	vivan@gmail.com	pass789	7654321098	56, PQR Road, Bengaluru	201	Express Service	299.90
2	Sanya Singh	sanya@gmail.com	pass456	8765432109	34, XYZ Street, Mumbai	201	Express Service	299.90
1	Aarav Kumar	aarav@gmail.com	pass123	9876543210	12, ABC Colony, New Delhi	201	Express Service	299.90

15) List all employees and all locations, showing all possible combinations:

EmployeeID	Name	Email	ContactNumber	Role	Salary	LocationID	LocationName	Address
305	Neha Gupta	neha@gmail.com	5432109876	Logistics Coordinator	65000.00	401	New Delhi	New Delhi, Delhi, India
304	Amit Kumar	amit@gmail.com	6543210987	Customer Service	55000.00	401	New Delhi	New Delhi, Delhi, India
303	Anjali Singh	anjali@gmail.com	7654321098	Delivery Driver	50000.00	401	New Delhi	New Delhi, Delhi, India
302	Priya Patel	priya@gmail.com	8765432109	Supervisor	60000.00	401	New Delhi	New Delhi, Delhi, India
301	Rohit Sharma	rohit@gmail.com	9876543210	Manager	70000.00	401	New Delhi	New Delhi, Delhi, India

16) Retrieve a list of couriers and their corresponding sender information.

courierID	SenderName	SenderAddress
101	Rahul Verma	12, ABC Colony, New Delhi
102	Neha Sharma	56, PQR Road, Bengaluru
103	Kriti Patel	90, EFG Lane, Chennai
104	Vivek Singh	45, UVW Street, Pune
105	Ananya Reddy	89, JKL Lane, Jaipur

17) Retrieve a list of couriers and their corresponding receiver information.

CourierID	ReceiverName	ReceiverAddress
101	Priya Singh	34, XYZ Street, Mumbai
102	Ajay Kumar	78, LMN Avenue, Kolkata
103	Arjun Gupta	23, RST Gardens, Hyderabad
104	Shreya Mishra	67, GHI Enclave, Ahmedabad
105	Rohan Kapoor	10, MNO Road, Chandigarh

18) Retrieve a list of couriers along with the courier service details.

courierID	ServiceID	ServiceName
105	201	Express Service
104	201	Express Service
103	201	Express Service
102	201	Express Service
101	201	Express Service

19) Retrieve a list of locations and the total payment amount received at each location.

Amount	locationName
150.00	New Delhi
170.00	Mumbai
245.00	Bengaluru
155.00	Kolkata
260.00	Chennai

20) Retrieve all couriers sent by the same sender.

```
mysql> select courierID , SenderName ,count(courierID) from courier group by SenderName,courierID having count(*)>1;
Empty set (0.00 sec)
```

21) List all employees who share the same role.

EmployeeID	Name	Email	ContactNumber	Role	Salary
302	Priya Patel	priya@gmail.com	8765432109	Delivery Driver	60000.00
303	Anjali Singh	anjali@gmail.com	7654321098	Delivery Driver	50000.00

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

payment amount	Address
150.00	New Delhi , Delhi,India
260.00	New Delhi , Delhi,India

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

courierID	Weight
102	3.10
104	2.90

24) Find the names of all employees who have a salary greater than the average salary.

Name
Rohit Sharma
Neha Gupta

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

TotalCost
899.87

26) Find all couriers that have been paid for.

CourierID	SenderName	SenderAddress	ReceiverName	ReceiverAddress	Weight	Status	TrackingNumber	DeliveryDate
101	Rahul Verma	12, ABC Colony, New Delhi	Priya Singh	34, XYZ Street, Mumbai	2.50	In Transit	TRACK001	2023-12-15
102	Neha Sharma	56, PQR Road, Bengaluru	Ajay Kumar	78, LMN Avenue, Kolkata	3.10	Pending	TRACK002	2023-12-18
103	Kriti Patel	90, EFG Lane, Chennai	Arjun Gupta	23, RST Gardens, Hyderabad	1.80	Delivered	TRACK003	2023-12-12
104	Vivek Singh	45, UVW Street, Pune	Shreya Mishra	67, GHI Enclave, Ahmedabad	2.90	In Transit	TRACK004	2023-12-16
105	Ananya Reddy	89, JKL Lane, Jaipur	Rohan Kapoor	10, MNO Road, Chandigarh	2.30	Delivered	TRACK005	2023-12-14

27) Find the locations where the maximum payment amount was made .

LocationName
Chennai

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

CourierID	SenderName	SenderAddress	ReceiverName	ReceiverAddress	Weight	Status	TrackingNumber	DeliveryDate
102	Neha Sharma	56, PQR Road, Bengaluru	Ajay Kumar	78, LMN Avenue, Kolkata	3.10	Pending	TRACK002	2023-12-18
104	Vivek Singh	45, UVW Street, Pune	Shreya Mishra	67, GHI Enclave, Ahmedabad	2.90	In Transit	TRACK004	2023-12-16