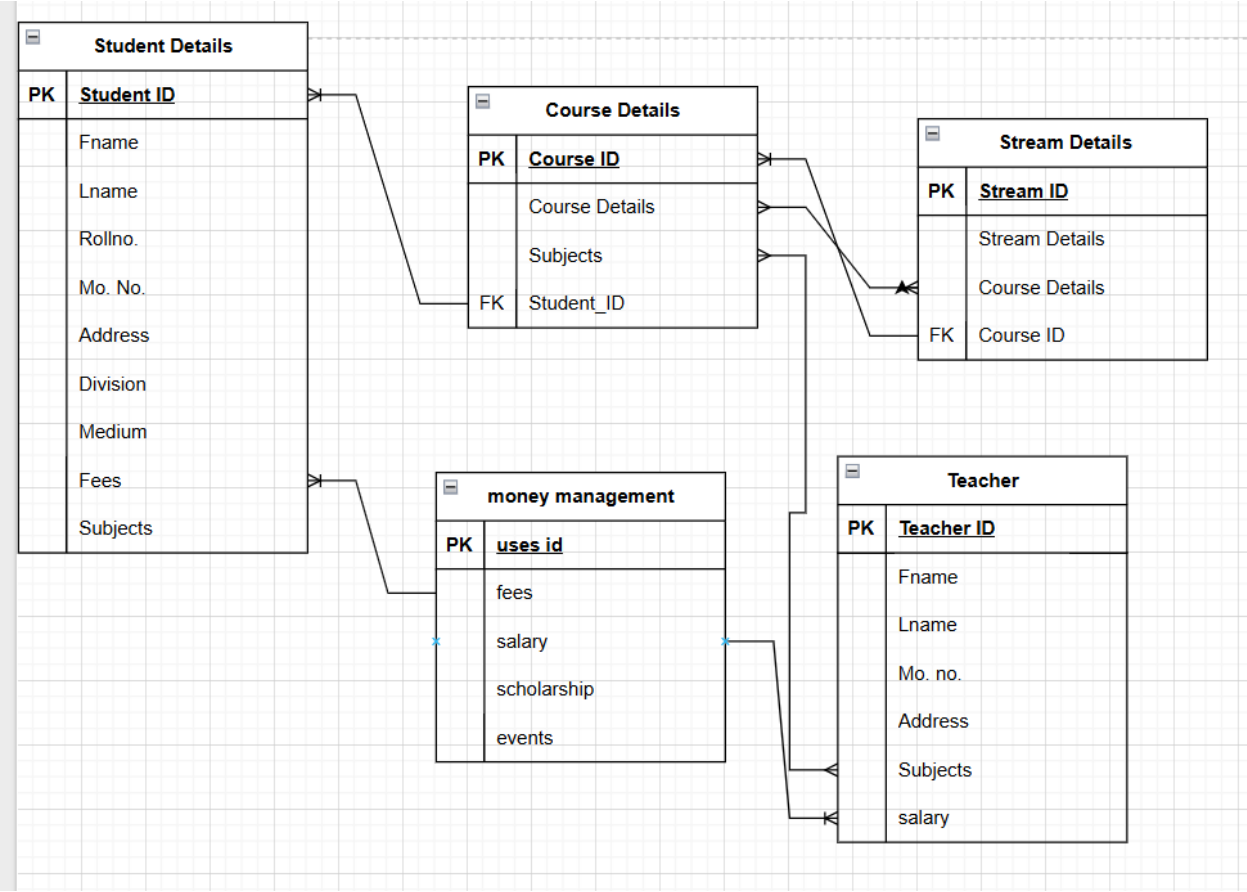
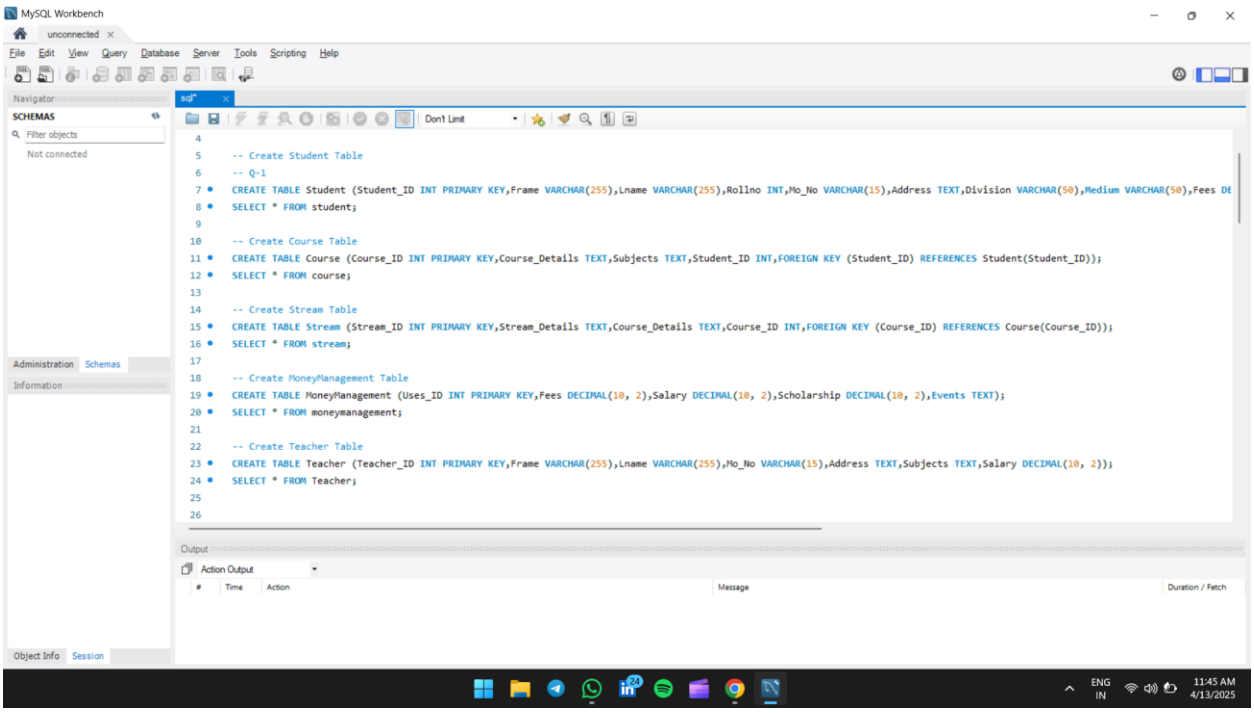
Q-1. Design an entity-relationship (ER) diagram for a School Management System and translate it into a relational database schema.




MySQL Workbench
unconnected
File Edit View Query Database Server Tools Scripting Help
Navigator
SCHEMAS
Filter objects
Not connected
Administration Schemas
Information
Object Info Session
sql*
Don't Limit
-- Create Student Table
-- Q-1
CREATE TABLE Student (Student_ID INT PRIMARY KEY,Frame VARCHAR(255),Lname VARCHAR(255),Rollno INT,Mo_No VARCHAR(15),Address TEXT,Division VARCHAR(50),Medium VARCHAR(50),Fees DE
SELECT * FROM student;
-- Create Course Table
CREATE TABLE Course (Course_ID INT PRIMARY KEY,Course_Details TEXT,Subjects TEXT,Student_ID INT,FOREIGN KEY (Student_ID) REFERENCES Student(Student_ID));
SELECT * FROM course;
-- Create Stream Table
CREATE TABLE Stream (Stream_ID INT PRIMARY KEY,Stream_Details TEXT,Course_Details TEXT,Course_ID INT,FOREIGN KEY (Course_ID) REFERENCES Course(Course_ID));
SELECT * FROM stream;
-- Create MoneyManagement Table
CREATE TABLE MoneyManagement (Uses_ID INT PRIMARY KEY,Fees DECIMAL(10, 2),Salary DECIMAL(10, 2),Scholarship DECIMAL(10, 2),Events TEXT);
SELECT * FROM moneymanagement;
-- Create Teacher Table
CREATE TABLE Teacher (Teacher_ID INT PRIMARY KEY,Frame VARCHAR(255),Lname VARCHAR(255),Mo_No VARCHAR(15),Address TEXT,Subjects TEXT,Salary DECIMAL(10, 2));
SELECT * FROM Teacher;
Output
Action Output
Time Action Message Duration / Fetch
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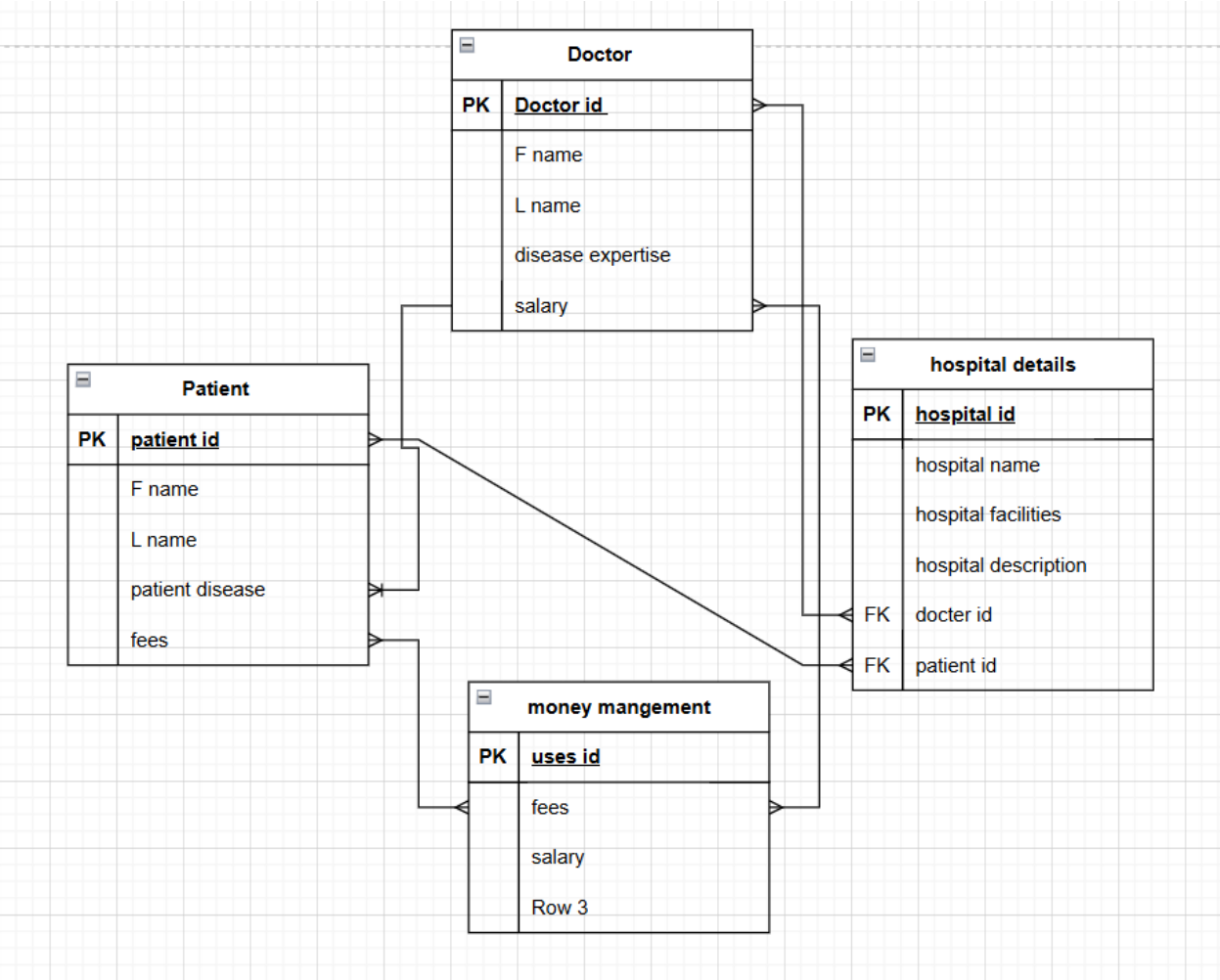
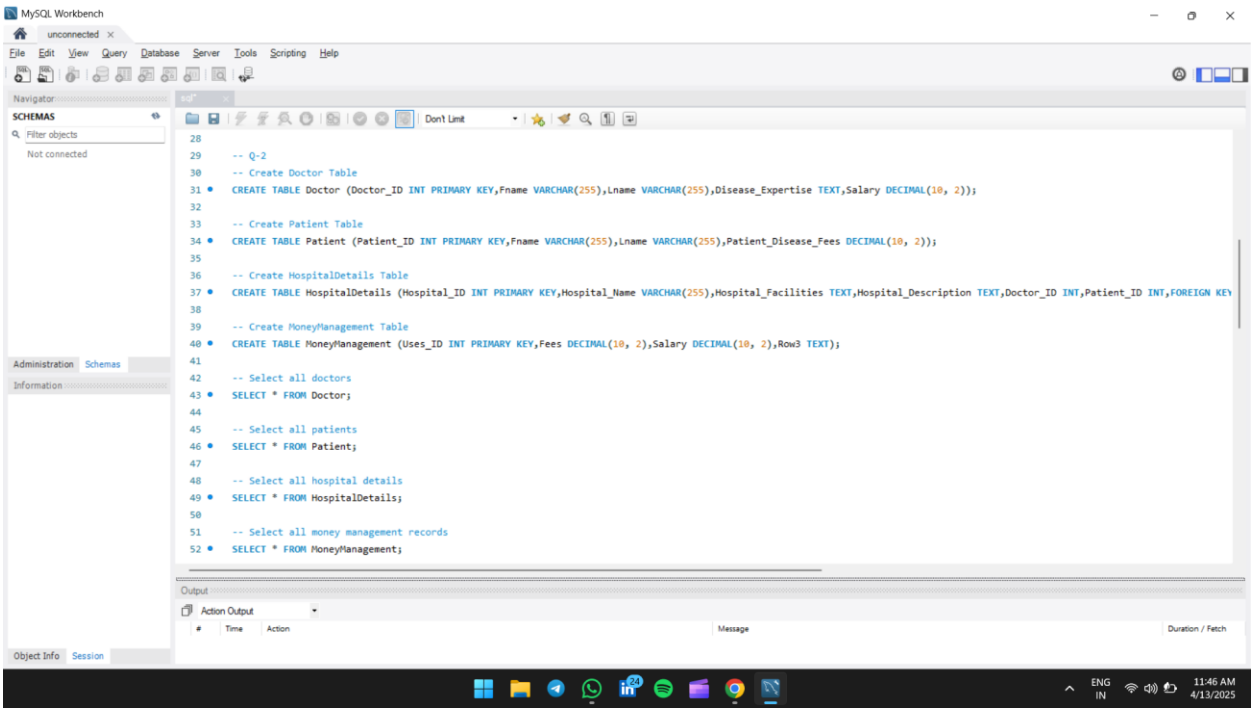
Q-2. Design an entity-relationship (ER) diagram for a Hospital Management System and translate it into a relational database schema.




MySQL Workbench
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File Edit View Query Database Server Tools Scripting Help
Navigator
SCHEMAS
Filter objects
Not connected
Administration Schemas
Information
Object Info Session
Don't Limit
28
29 -- Q-2
30 -- Create Doctor Table
31 CREATE TABLE Doctor (Doctor_ID INT PRIMARY KEY,Fname VARCHAR(255),Lname VARCHAR(255),Disease_Expertise TEXT,Salary DECIMAL(10, 2));
32
33 -- Create Patient Table
34 CREATE TABLE Patient (Patient_ID INT PRIMARY KEY,Fname VARCHAR(255),Lname VARCHAR(255),Patient_Disease_Fees DECIMAL(10, 2));
35
36 -- Create HospitalDetails Table
37 CREATE TABLE HospitalDetails (Hospital_ID INT PRIMARY KEY,Hospital_Name VARCHAR(255),Hospital_Facilities TEXT,Hospital_Description TEXT,Doctor_ID INT,Patient_ID INT,FOREIGN KEY
38
39 -- Create MoneyManagement Table
40 CREATE TABLE MoneyManagement (Uses_ID INT PRIMARY KEY,Fees DECIMAL(10, 2),Salary DECIMAL(10, 2),Row3 TEXT);
41
42 -- Select all doctors
43 SELECT * FROM Doctor;
44
45 -- Select all patients
46 SELECT * FROM Patient;
47
48 -- Select all hospital details
49 SELECT * FROM HospitalDetails;
50
51 -- Select all money management records
52 SELECT * FROM MoneyManagement;
Output
Action Output
Time Action Message Duration / Fetch
ENG IN
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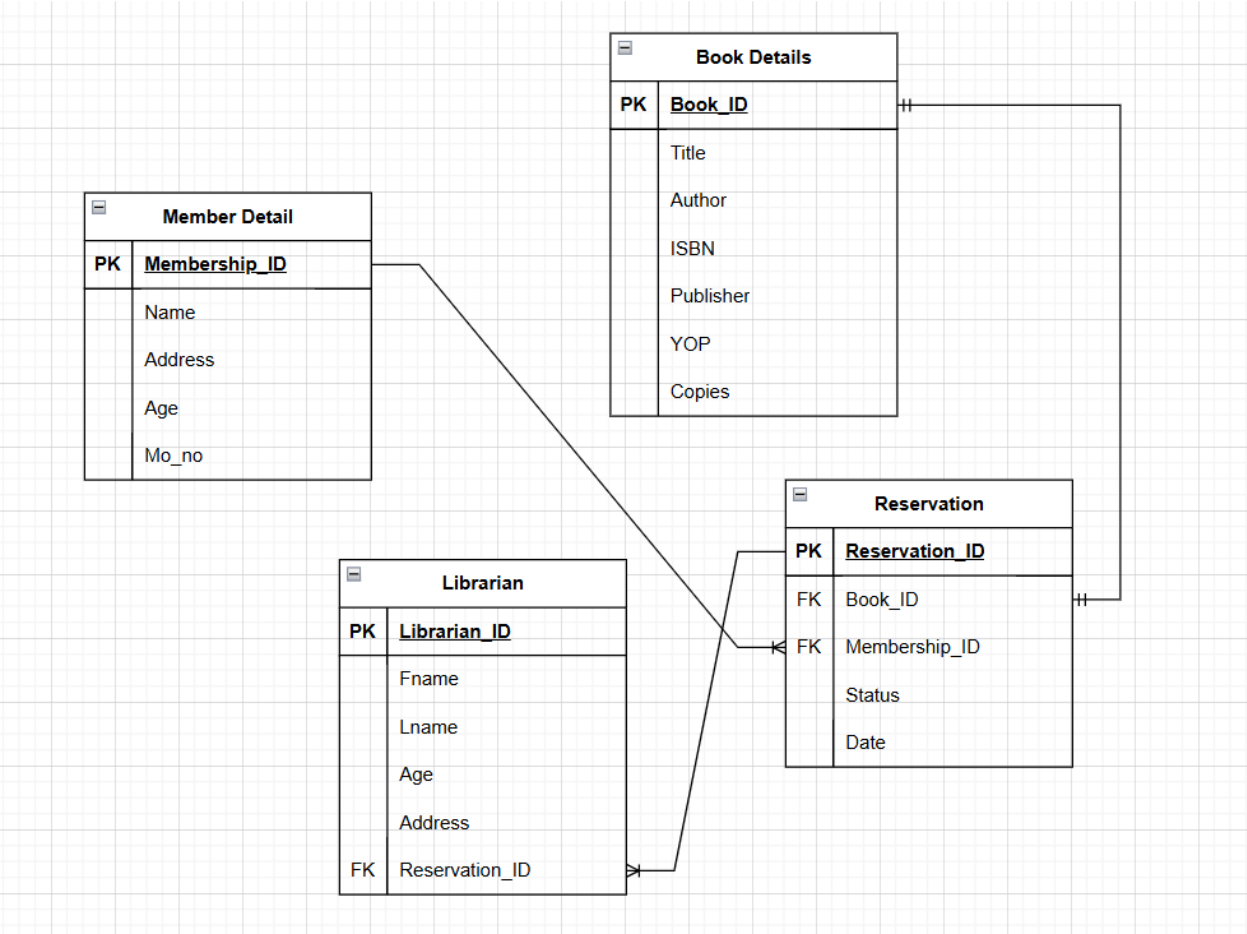
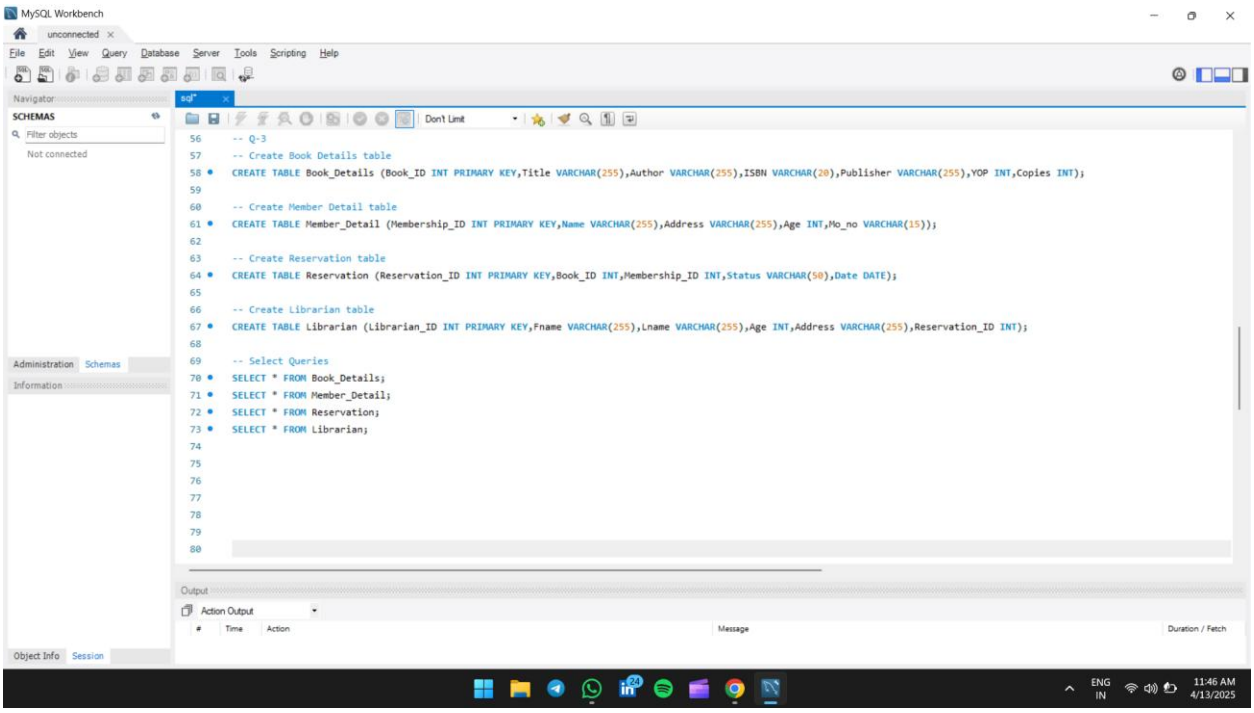
4/13/2025

Q-3. Design an entity-relationship (ER) diagram for a Library Management System and translate it into a relational database schema.

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Navigator
SCHEMAS
Filter objects
Not connected
Administration Schemas
Information
Object Info Session
sql*
Don't Limit
56 -- Q-3
57 -- Create Book Details table
58 CREATE TABLE Book_Details (Book_ID INT PRIMARY KEY,Title VARCHAR(255),Author VARCHAR(255),ISBN VARCHAR(20),Publisher VARCHAR(255),YOP INT,Copies INT);
59
60 -- Create Member Detail table
61 CREATE TABLE Member_Detail (Membership_ID INT PRIMARY KEY,Name VARCHAR(255),Address VARCHAR(255),Age INT,Mo_no VARCHAR(15));
62
63 -- Create Reservation table
64 CREATE TABLE Reservation (Reservation_ID INT PRIMARY KEY,Book_ID INT,Membership_ID INT,Status VARCHAR(50),Date DATE);
65
66 -- Create Librarian table
67 CREATE TABLE Librarian (Librarian_ID INT PRIMARY KEY,Fname VARCHAR(255),Lname VARCHAR(255),Age INT,Address VARCHAR(255),Reservation_ID INT);
68
69 -- Select Queries
70 SELECT * FROM Book_Details;
71 SELECT * FROM Member_Detail;
72 SELECT * FROM Reservation;
73 SELECT * FROM Librarian;
74
75
76
77
78
79
80
Output
Action Output
Time Action Message Duration / Fetch
ENG IN
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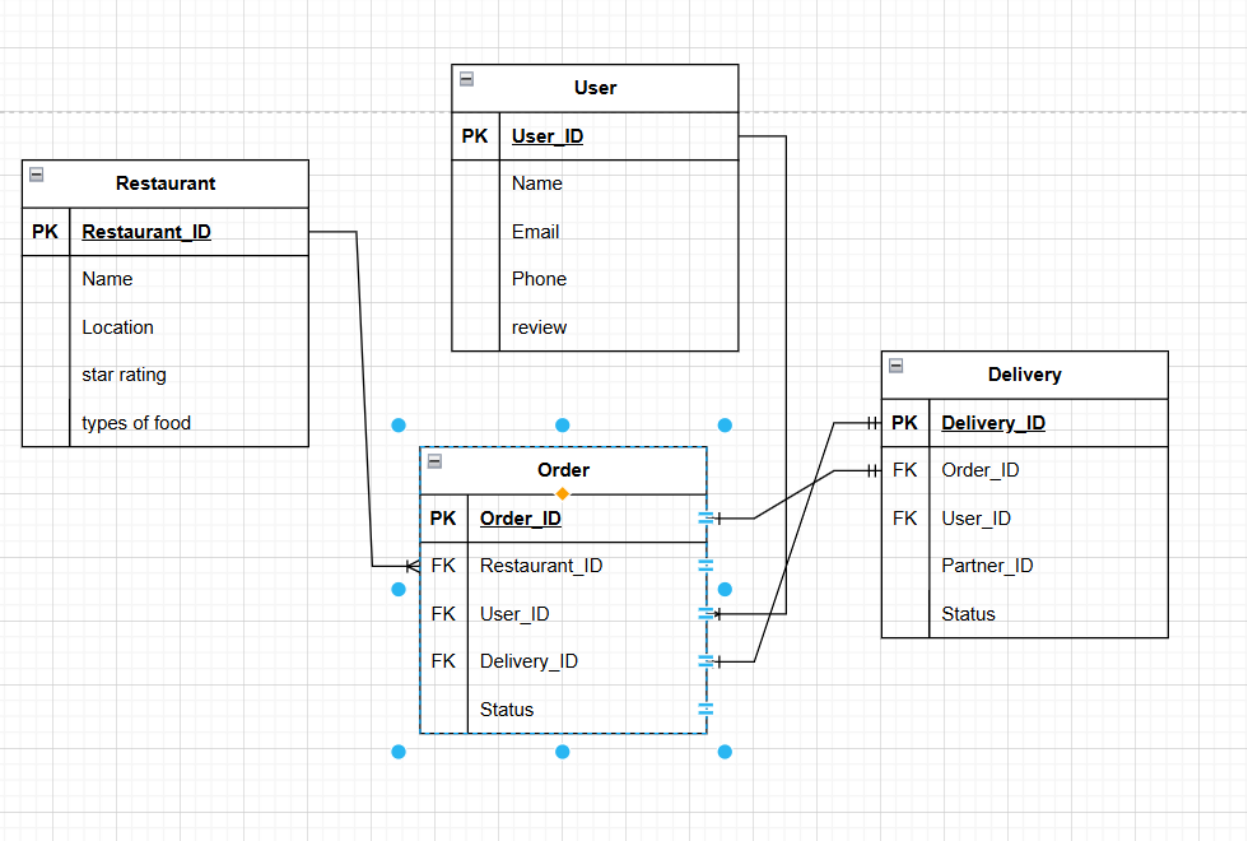
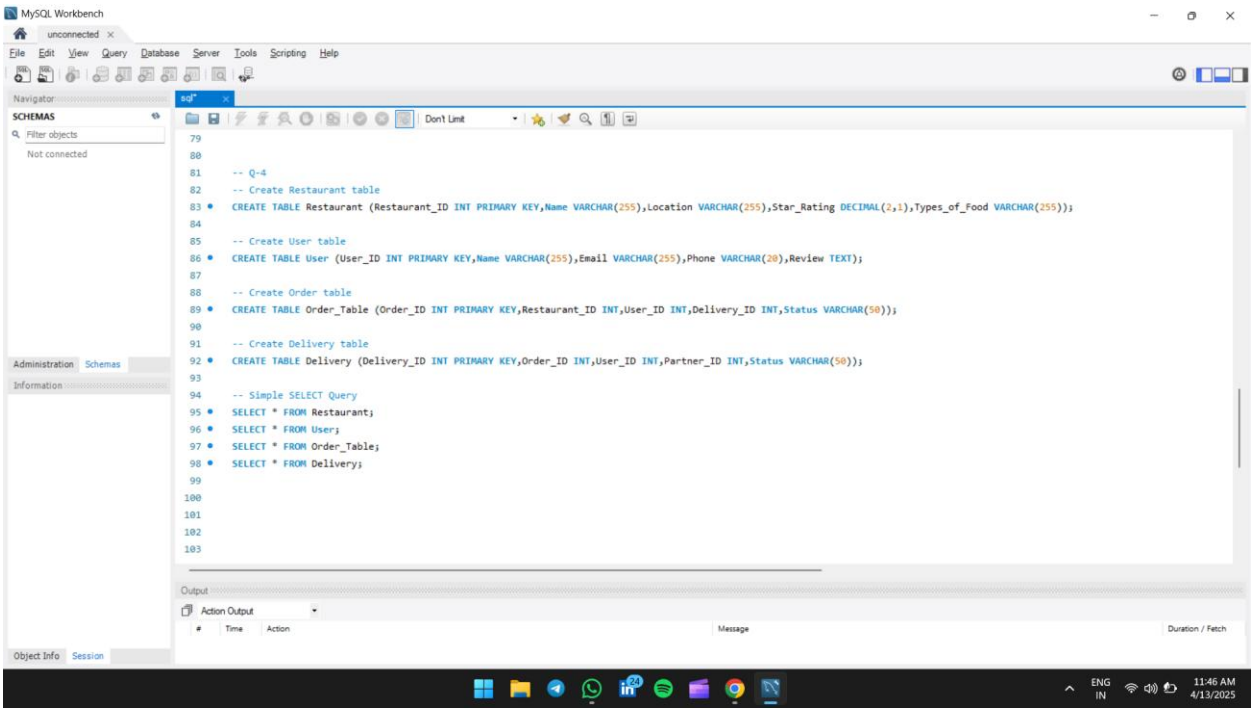
4/13/2025

Q-4. Design an entity-relationship (ER) diagram for a Zomato services system and translate it into a relational database schema.

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File Edit View Query Database Server Tools Scripting Help
Navigator
SCHEMAS
Filter objects
Not connected
Administration Schemas
Information
Object Info Session
Don't Limit
79
80
81 -- Q-4
82 -- Create Restaurant table
83 CREATE TABLE Restaurant (Restaurant_ID INT PRIMARY KEY,Name VARCHAR(255),Location VARCHAR(255),Star_Rating DECIMAL(2,1),Types_of_Food VARCHAR(255));
84
85 -- Create User table
86 CREATE TABLE User (User_ID INT PRIMARY KEY,Name VARCHAR(255),Email VARCHAR(255),Phone VARCHAR(20),Review TEXT);
87
88 -- Create Order table
89 CREATE TABLE Order_Table (Order_ID INT PRIMARY KEY,Restaurant_ID INT,User_ID INT,Delivery_ID INT,Status VARCHAR(50));
90
91 -- Create Delivery table
92 CREATE TABLE Delivery (Delivery_ID INT PRIMARY KEY,Order_ID INT,User_ID INT,Partner_ID INT,Status VARCHAR(50));
93
94 -- Simple SELECT Query
95 SELECT * FROM Restaurant;
96 SELECT * FROM User;
97 SELECT * FROM Order_Table;
98 SELECT * FROM Delivery;
99
100
101
102
103
Output
Action Output
Time Action Message Duration / Fetch
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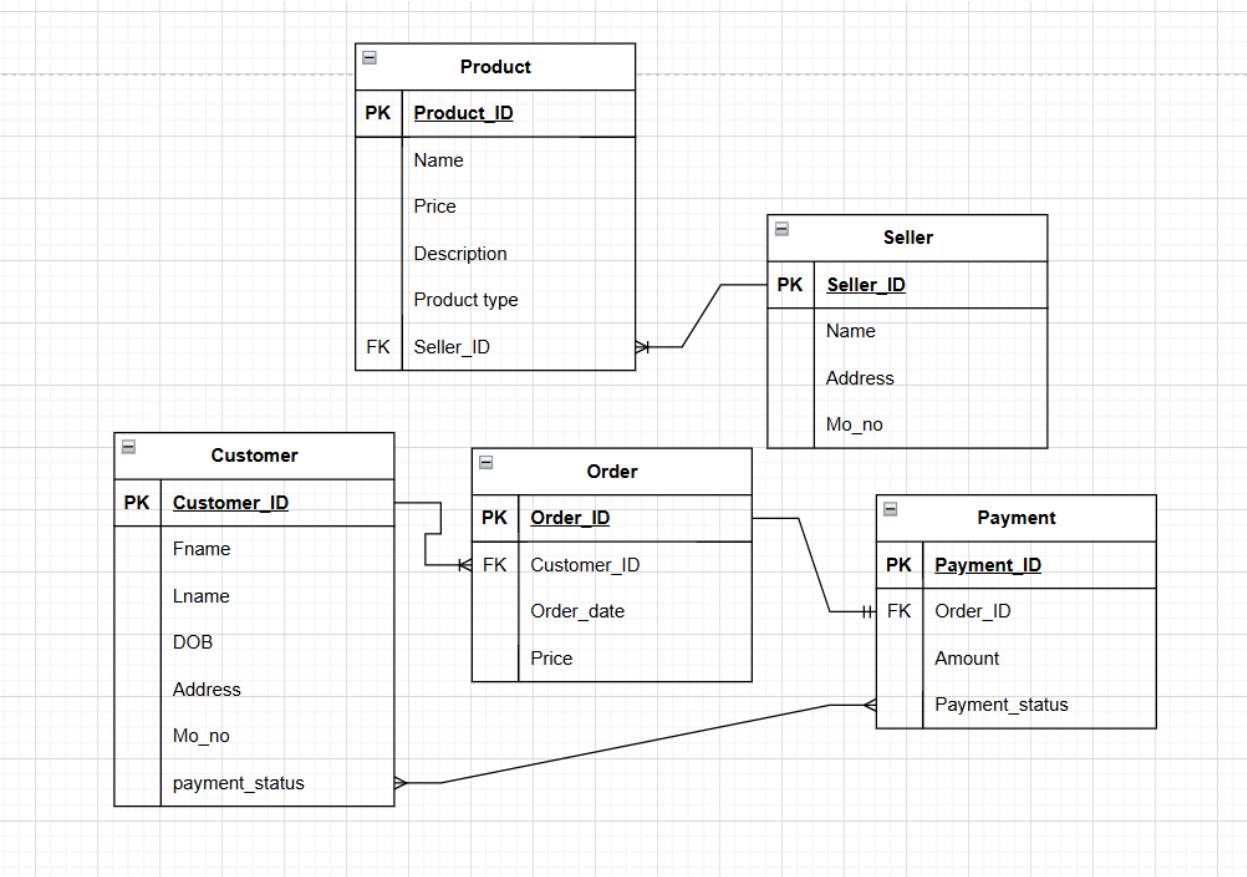
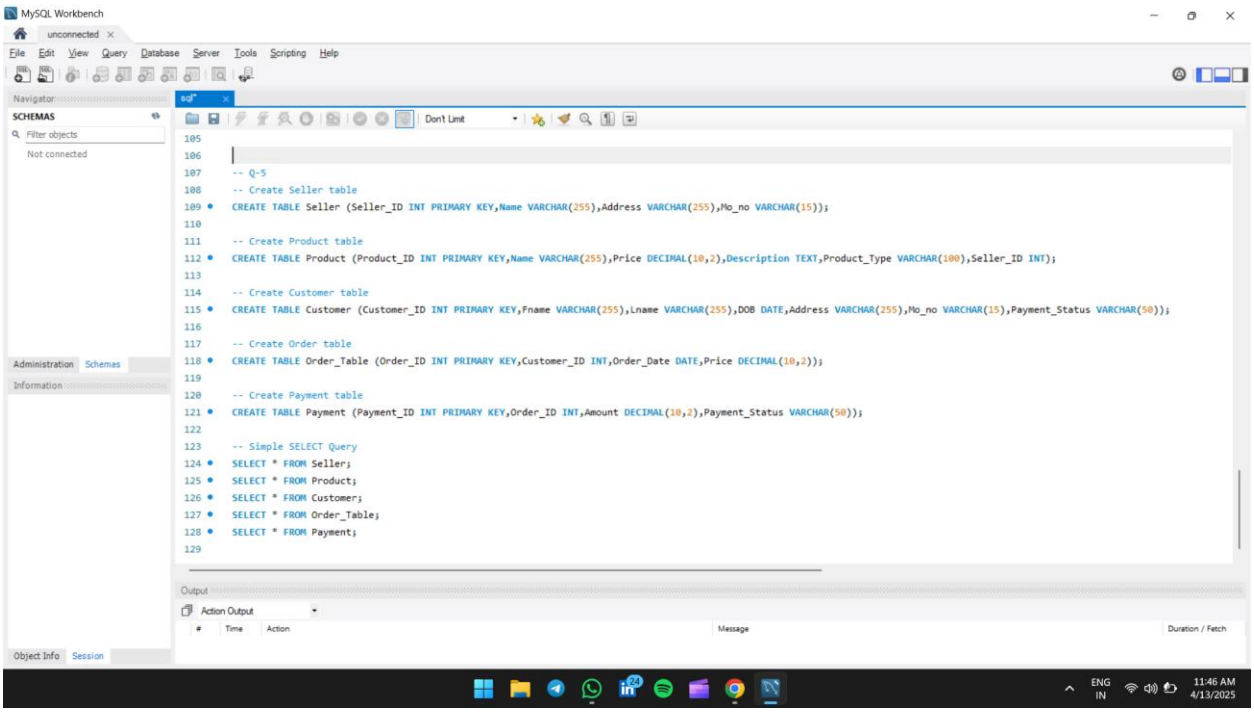
Q-5. Design an entity-relationship (ER) diagram for an Amazon services system and translate it into a relational database schema.




MySQL Workbench
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Navigator
SCHEMAS
Filter objects
Not connected
Administration Schemas
Information
Object Info Session
sql*
Don't Limit
105
106
107 -- Q-5
108 -- Create Seller table
109 CREATE TABLE Seller (Seller_ID INT PRIMARY KEY,Name VARCHAR(255),Address VARCHAR(255),Mo_no VARCHAR(15));
110
111 -- Create Product table
112 CREATE TABLE Product (Product_ID INT PRIMARY KEY,Name VARCHAR(255),Price DECIMAL(10,2),Description TEXT,Product_Type VARCHAR(100),Seller_ID INT);
113
114 -- Create Customer table
115 CREATE TABLE Customer (Customer_ID INT PRIMARY KEY,Fname VARCHAR(255),Lname VARCHAR(255),DOB DATE,Address VARCHAR(255),Mo_no VARCHAR(15),Payment_Status VARCHAR(50));
116
117 -- Create Order table
118 CREATE TABLE Order_Table (Order_ID INT PRIMARY KEY,Customer_ID INT,Order_Date DATE,Price DECIMAL(10,2));
119
120 -- Create Payment table
121 CREATE TABLE Payment (Payment_ID INT PRIMARY KEY,Order_ID INT,Amount DECIMAL(10,2),Payment_Status VARCHAR(50));
122
123 -- Simple SELECT Query
124 SELECT * FROM Seller;
125 SELECT * FROM Product;
126 SELECT * FROM Customer;
127 SELECT * FROM Order_Table;
128 SELECT * FROM Payment;
129
Output
Action Output
Time Action Message Duration / Fetch
ENG IN
11:46 AM
4/13/2025

Q-6. Design example of SQL clauses (WHERE) to filter, sort, and group data.

```
382
383 •  use Takshay;
384 •  select (count(*)) from customers
385    where firstname like 'b%' and lastname like 'v%';
386
387 •  select * from customers
388    order  by postalcode;
389
390 •  select * from customers
391    where firstname like '_v%' and  lastname like '%a';
392
393
394
395
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

CustomerID	FirstName	LastName	Date_of_Birth	City	State	Country	PostalCode	Phone	Email	DateEntered
5001	Cleaning & Household	Yes	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
5002	Kitchen, Garden & Pets	Yes	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
5003	Foodgrains, Oil & Masala	Yes	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
5004	Gourmet & World Food	Yes	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
5005	Baby Care	No	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
5006	Snacks & Branded Foods	Yes	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

customers 7 | Read Only

Output

Action Output

#	Time	Action	Message	Duration / Fetch
5	20:03:51	select * from customers where firstname like '_m%' and lastname like '%t'	0 row(s) returned	0.000 sec / 0.000 sec
6	20:03:55	select * from customers where firstname like '_m%' and lastname like '%a'	0 row(s) returned	0.000 sec / 0.000 sec
7	20:04:01	select * from customers where firstname like '_v%' and lastname like '%a'	1 row(s) returned	0.000 sec / 0.000 sec
8	20:04:28	select * from customers order by postalcode	536 row(s) returned	0.000 sec / 0.000 sec

```
397    -- sort
398
399 •  select Category_id , Market_price
400    from products
401    order by sale_price desc;
402
403
404
405
406
407
408
409
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: | Fetch rows:

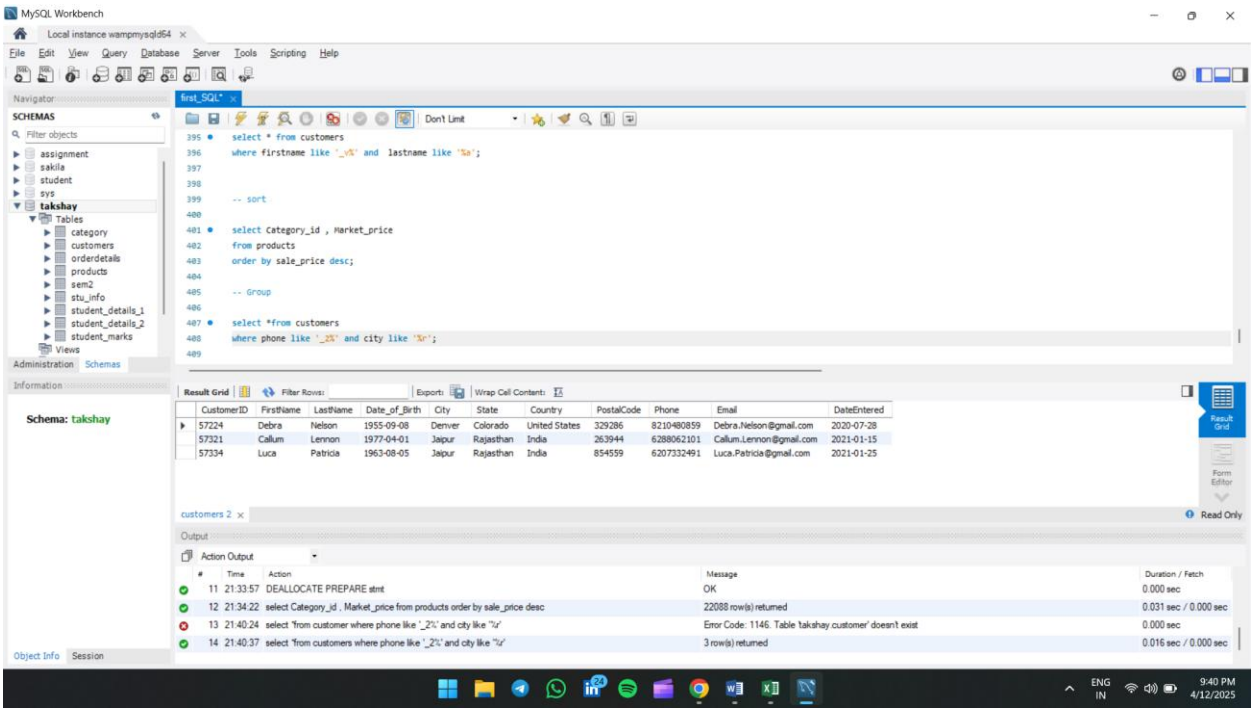
Category_id	Market_price
5002	12500
5002	10090
5008	10769
5002	12245
5002	9695
5002	10695

products 1 | Read O

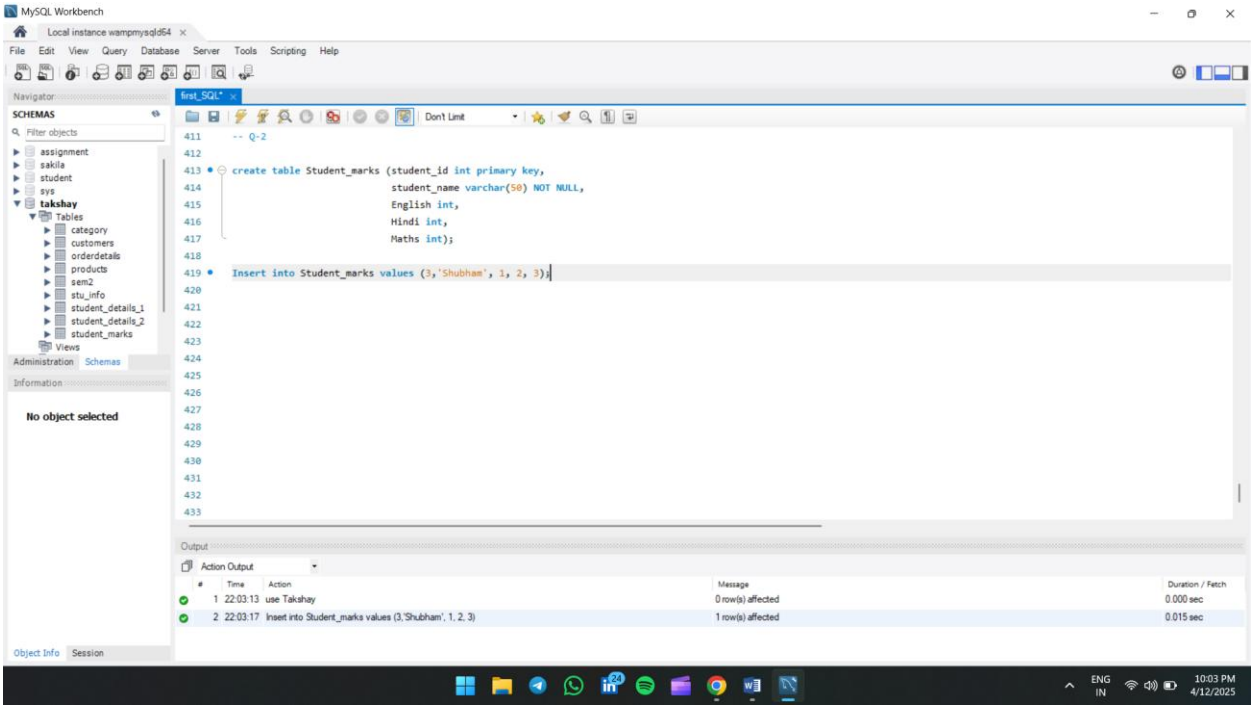
Output

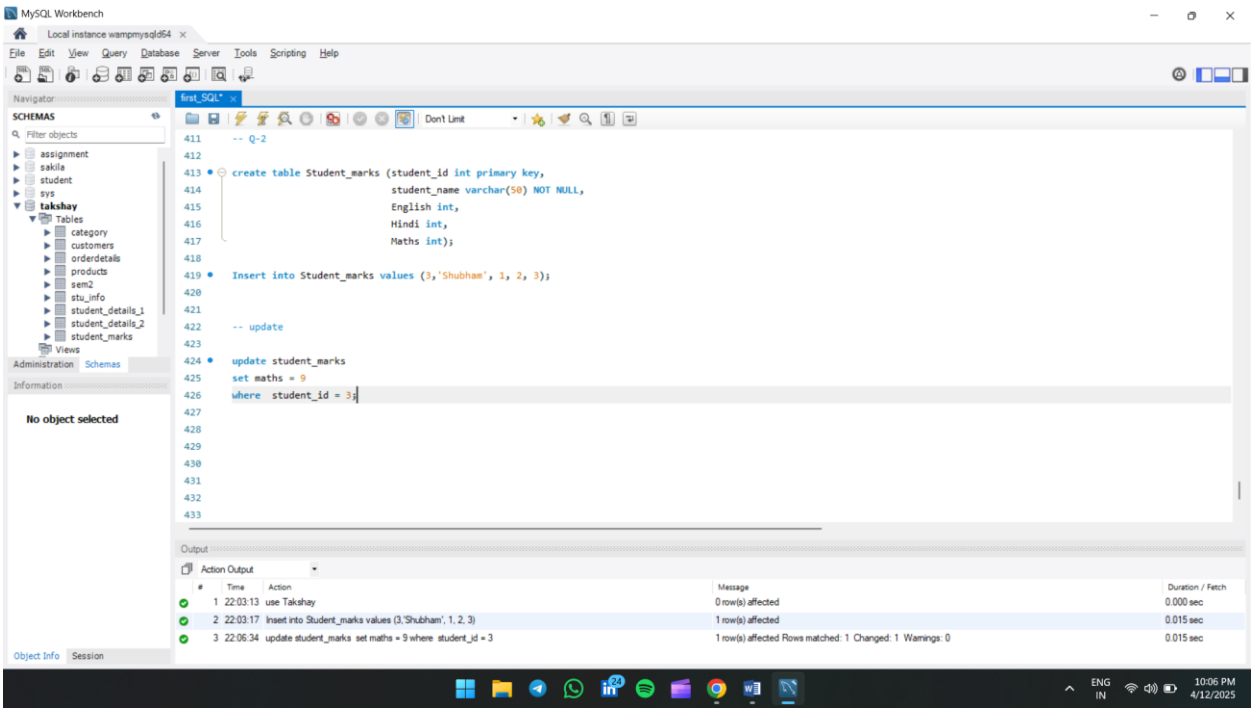
Action Output

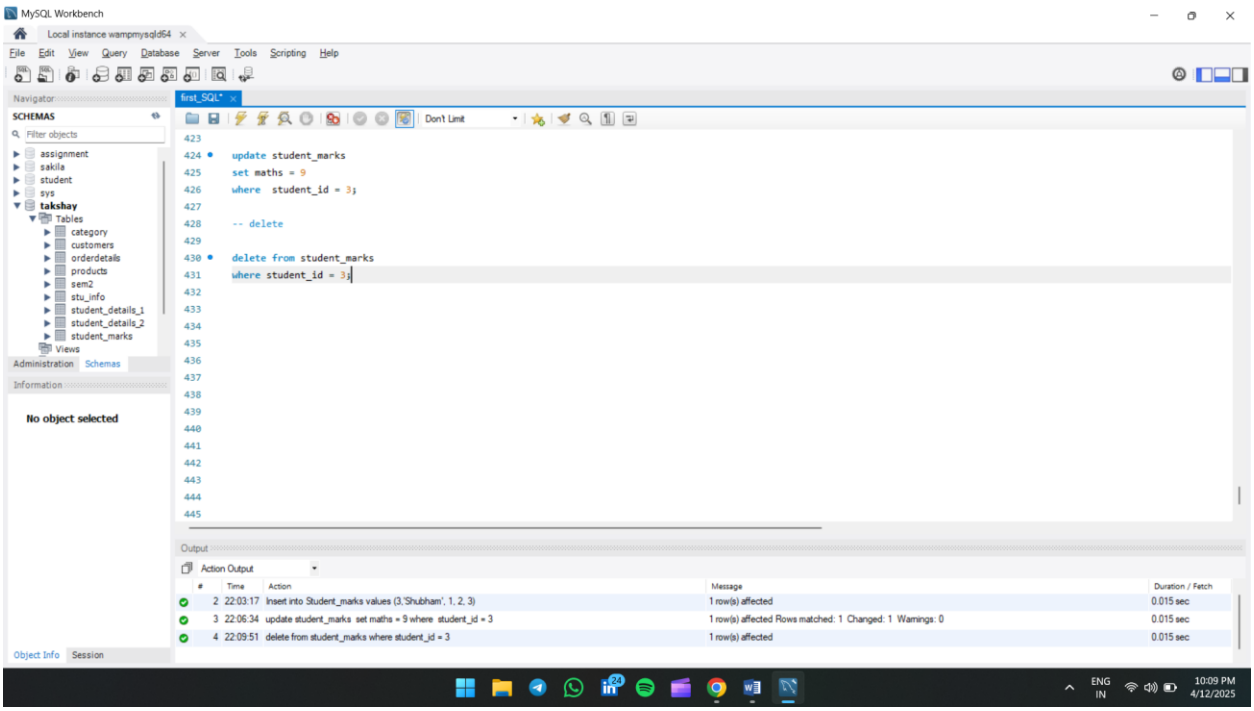
#	Time	Action	Message	Duration / Fetch
9	21:32:10	select Category_id , Market_price from products order by sale_prise desc	Error Code: 1054. Unknown column 'sale_prise' in 'order clause'	0.000 sec
10	21:32:50	select Category_id , Market_prise from products order by sale_prise desc	Error Code: 1054. Unknown column 'Market_prise' in 'field list'	0.000 sec
11	21:33:57	DEALLOCATE PREPARE stmt	OK	0.000 sec
12	21:34:22	select Category_id , Market_price from products order by sale_price desc	22088 row(s) returned	0.031 sec / 0.000 sec



Q-7. Perform basic data manipulation operations such as inserting new records, updating existing records, and deleting records.




MySQL Workbench
Local instance wampmysqld64
File Edit View Query Database Server Tools Scripting Help
SCHEMAS
assignment
sakila
student
sys
takshay
Tables
category
customers
orderdetails
products
sem2
stu_info
student_details_1
student_details_2
student_marks
Views
first_SQL*
-- Q-2
create table Student_marks (student_id int primary key,
student_name varchar(50) NOT NULL,
English int,
Hindi int,
Maths int);
Insert into Student_marks values (3,'Shubham', 1, 2, 3);
-- update
update student_marks
set maths = 9
where student_id = 3;
No object selected
Output
Action Output
1 22:03:13 use Takshay 0 row(s) affected 0.000 sec
2 22:03:17 Inset into Student_marks values (3,'Shubham', 1, 2, 3) 1 row(s) affected 0.015 sec
3 22:06:34 update student_marks set maths = 9 where student_id = 3 1 row(s) affected Rows matched: 1 Changed: 1 Warnings: 0 0.015 sec
10:06 PM
4/12/2025


MySQL Workbench
Local instance wampmysqld64
File Edit View Query Database Server Tools Scripting Help
SCHEMAS
first_SQL*
update student_marks
set maths = 9
where student_id = 3;
-- delete
delete from student_marks
where student_id = 3;
No object selected
Output
Action Output
2 22:03:17 Inset into Student_marks values (3,'Shubham', 1, 2, 3) 1 row(s) affected 0.015 sec
3 22:06:34 update student_marks set maths = 9 where student_id = 3 1 row(s) affected Rows matched: 1 Changed: 1 Warnings: 0 0.015 sec
4 22:09:51 delete from student_marks where student_id = 3 1 row(s) affected 0.015 sec
10:09 PM
4/12/2025

Q-8. Make a list of DDL, DML, DCL, and DQL commands.

✅ 1. DDL (Data Definition Language)

Used to define and modify database structure (schemas, tables, etc.)

Command	Description
`CREATE`	Creates database objects like tables, views, etc.
`ALTER`	Modifies existing database objects
`DROP`	Deletes database objects
`TRUNCATE`	Removes all records from a table (faster than DELETE, no rollback)
`RENAME`	Renames a table or a column
`COMMENT`	Adds comments to the data dictionary

✅ 2. DML (Data Manipulation Language)

Used to manage data within tables (insert, update, delete records)

Command	Description
`INSERT`	Inserts data into a table
`UPDATE`	Updates existing data in a table
`DELETE`	Deletes data from a table
`MERGE`	Combines `INSERT` and `UPDATE` operations
`CALL`	Calls a stored procedure

✅ 3. DCL (Data Control Language)

Used to control access to data in the database

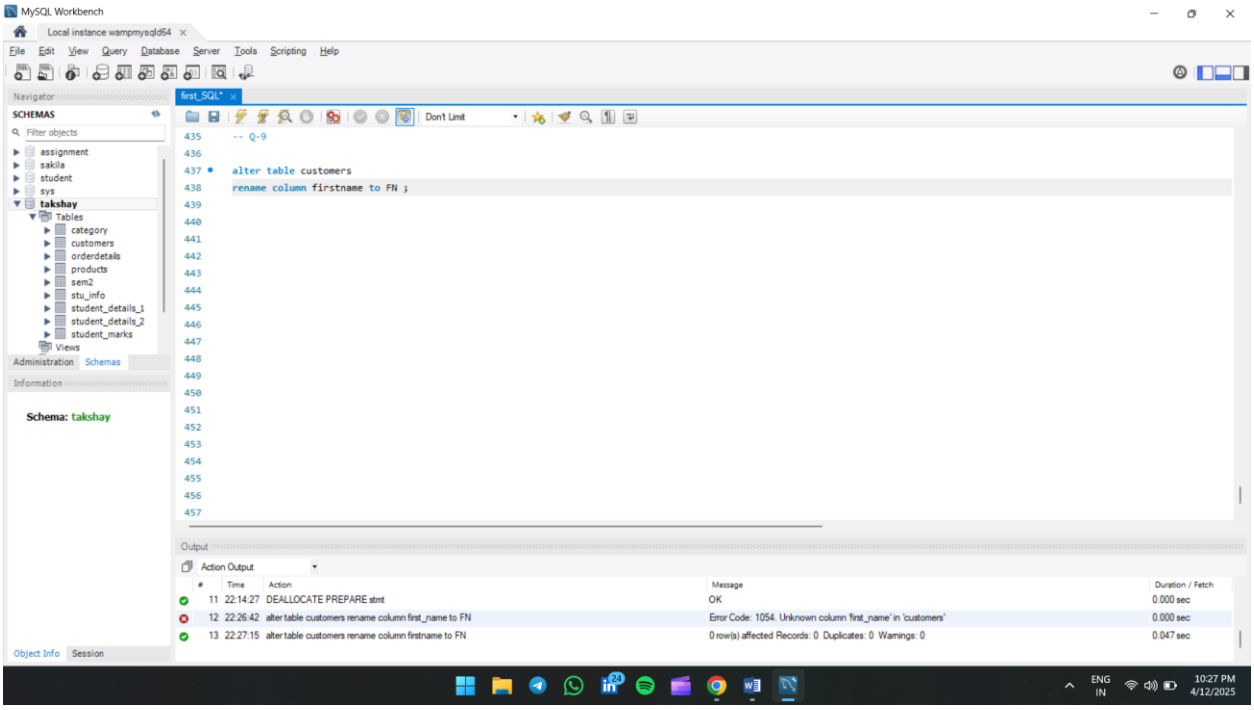
Command	Description
`GRANT`	Gives user access privileges to database
`REVOKE`	Removes user access privileges

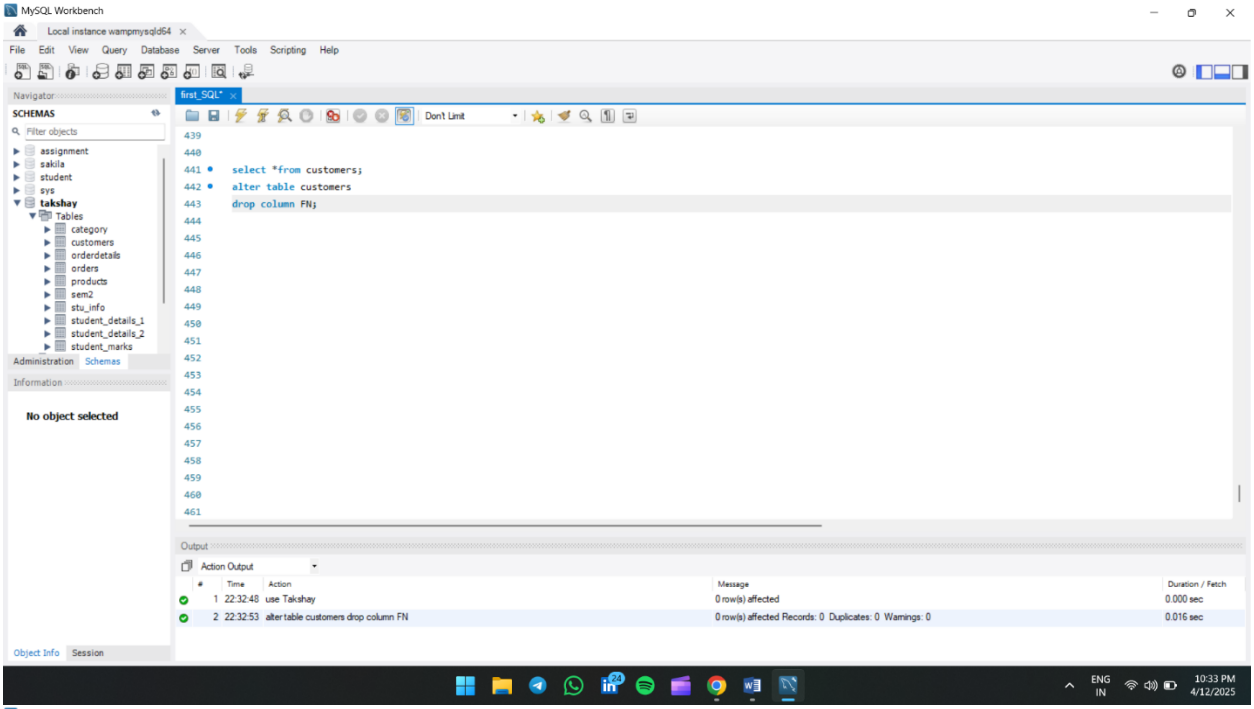
✅ 4. DQL (Data Query Language)

Used to query and fetch data from a database

Command	Description
`SELECT`	Retrieves data from one or more tables

Q-9. Apply to alter command in table and change the column name, drop data, change the datatype of the column, and add the column in Table.




MySQL Workbench
Local instance wampmysqld64
File Edit View Query Database Server Tools Scripting Help
Navigator
SCHEMAS
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Tables
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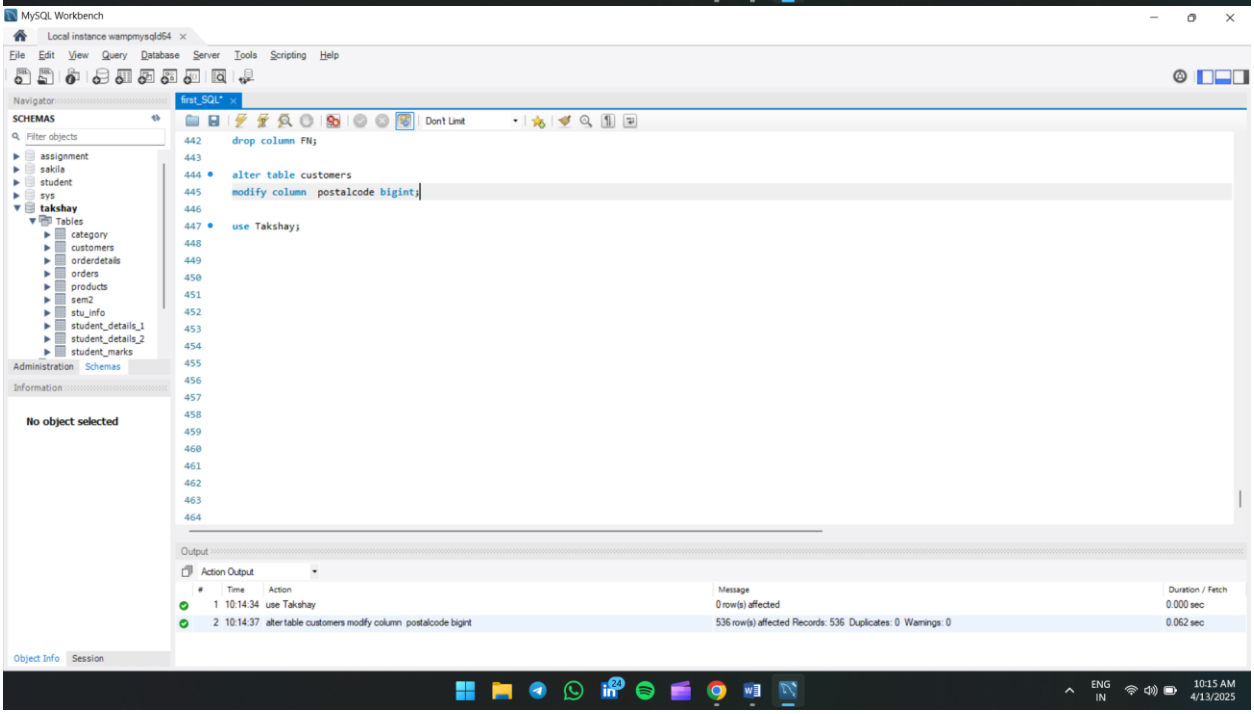
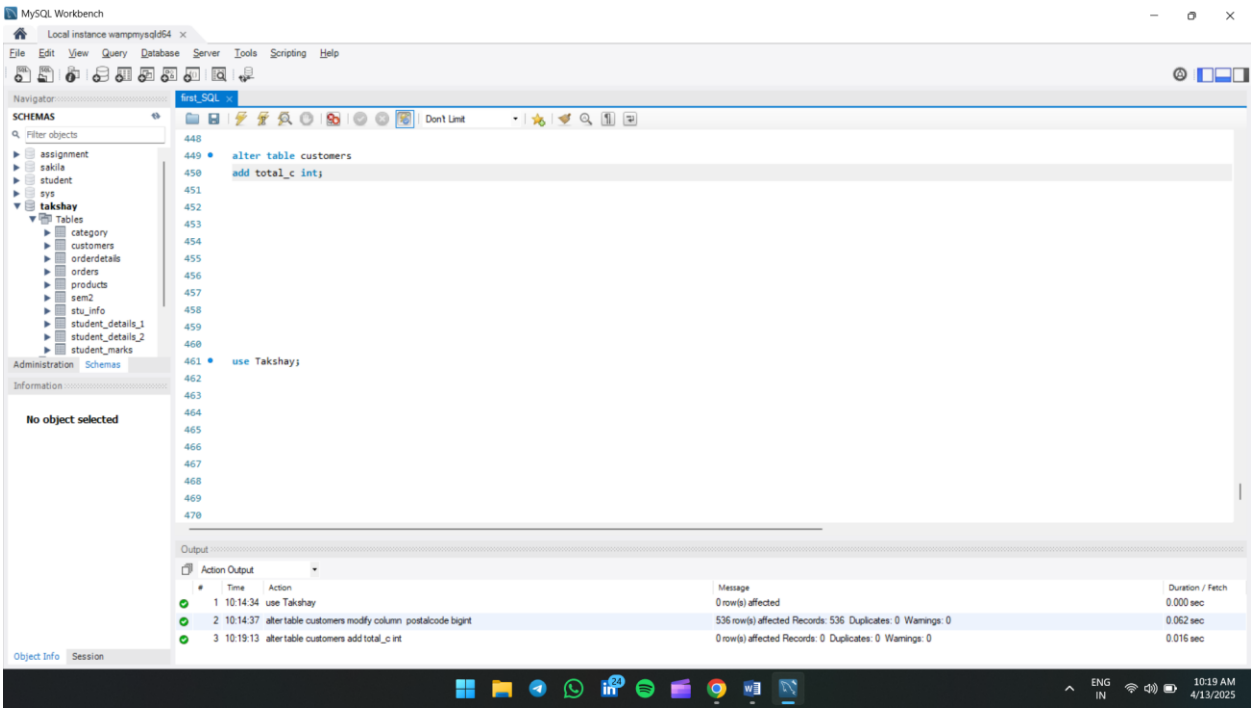
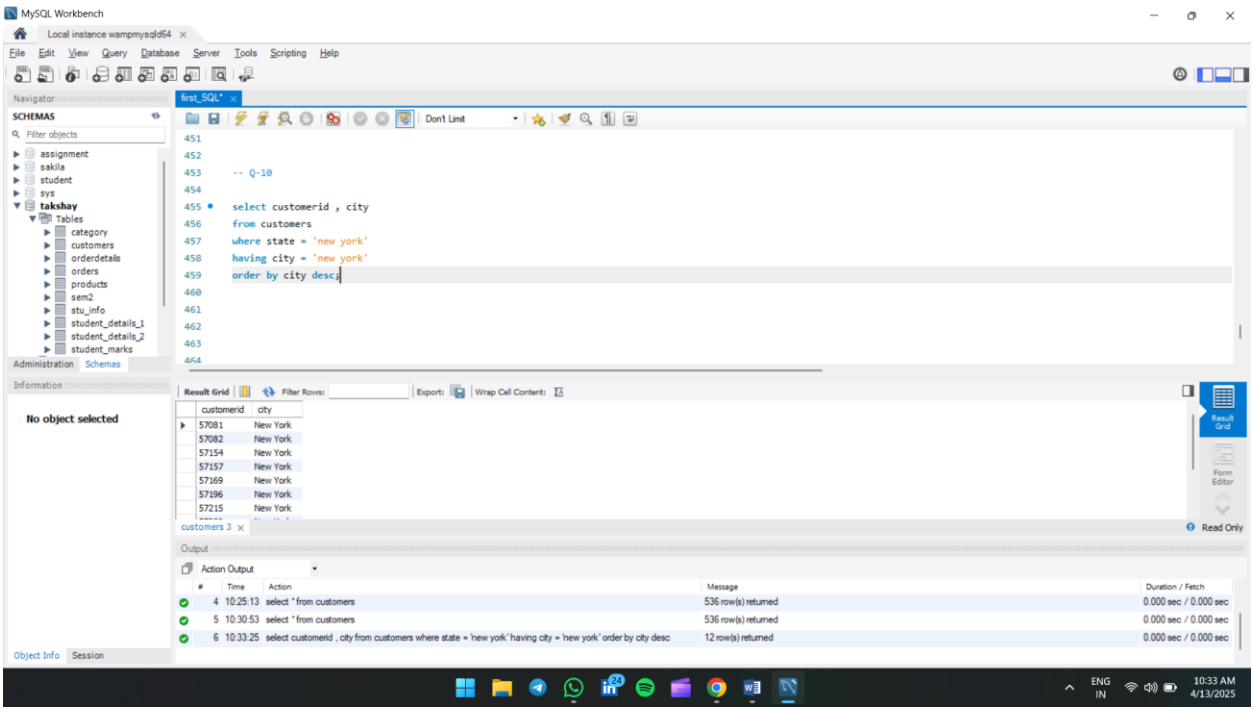
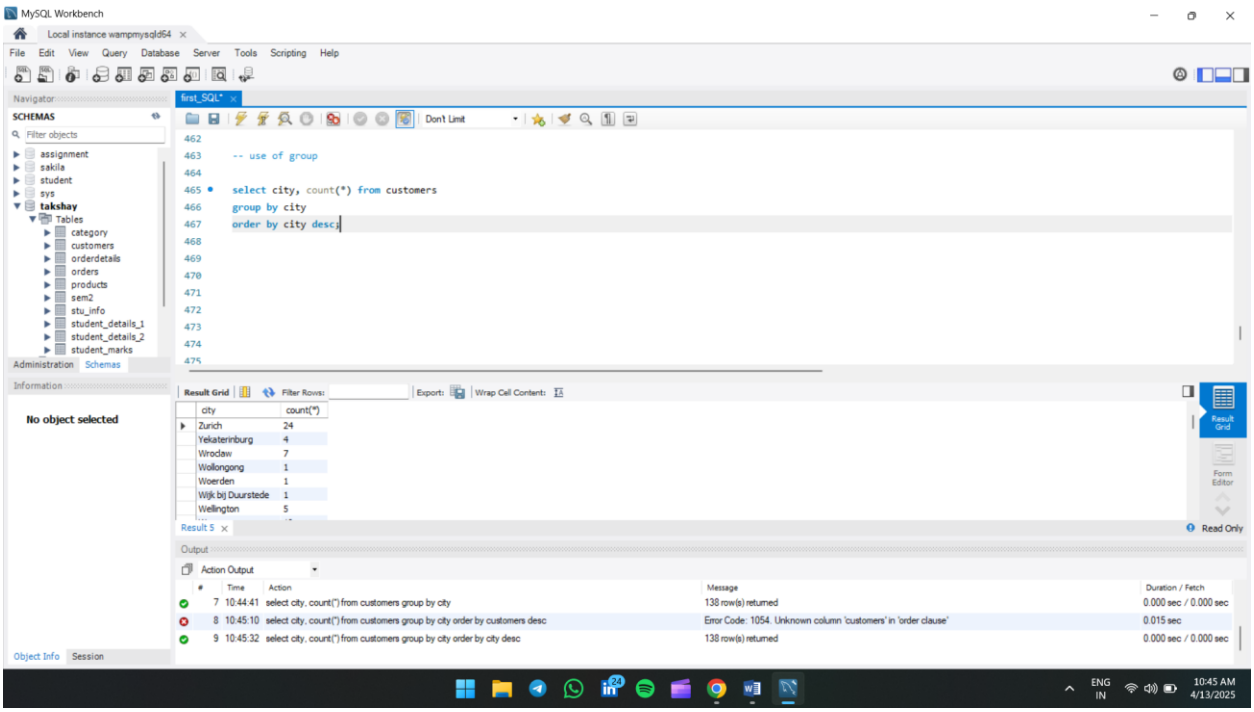
customers
orderdetails
orders
products
sem2
stu_info
student_details_1
student_details_2
student_marks
Administration Schemas
Information
No object selected
Object Info Session
first_SQL*
Don't Limit
439
440
441 select *from customers;
442 alter table customers
443 drop column FN;
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
Output
Action Output
Time Action Message Duration / Fetch
1 22:32:48 use Takshay 0 row(s) affected 0.000 sec
2 22:32:53 alter table customers drop column FN 0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0 0.016 sec
ENG IN
10:33 PM 4/12/2025


MySQL Workbench
Local instance wampmysqld64
File Edit View Query Database Server Tools Scripting Help
Navigator
SCHEMAS
Filter objects
assignment
sakila
student
sys
takshay
Tables
category
customers
orderdetails
orders
products
sem2
stu_info
student_details_1
student_details_2
student_marks
Administration Schemas
Information
No object selected
Object Info Session
first_SQL*
Don't Limit
442 drop column FN;
443
444 alter table customers
445 modify column postalcode bigint;
446
447 use Takshay;
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
Output
Action Output
Time Action Message Duration / Fetch
1 10:14:34 use Takshay 0 row(s) affected 0.000 sec
2 10:14:37 alter table customers modify column postalcode bigint 536 row(s) affected Records: 536 Duplicates: 0 Warnings: 0 0.062 sec
ENG IN
10:15 AM 4/13/2025

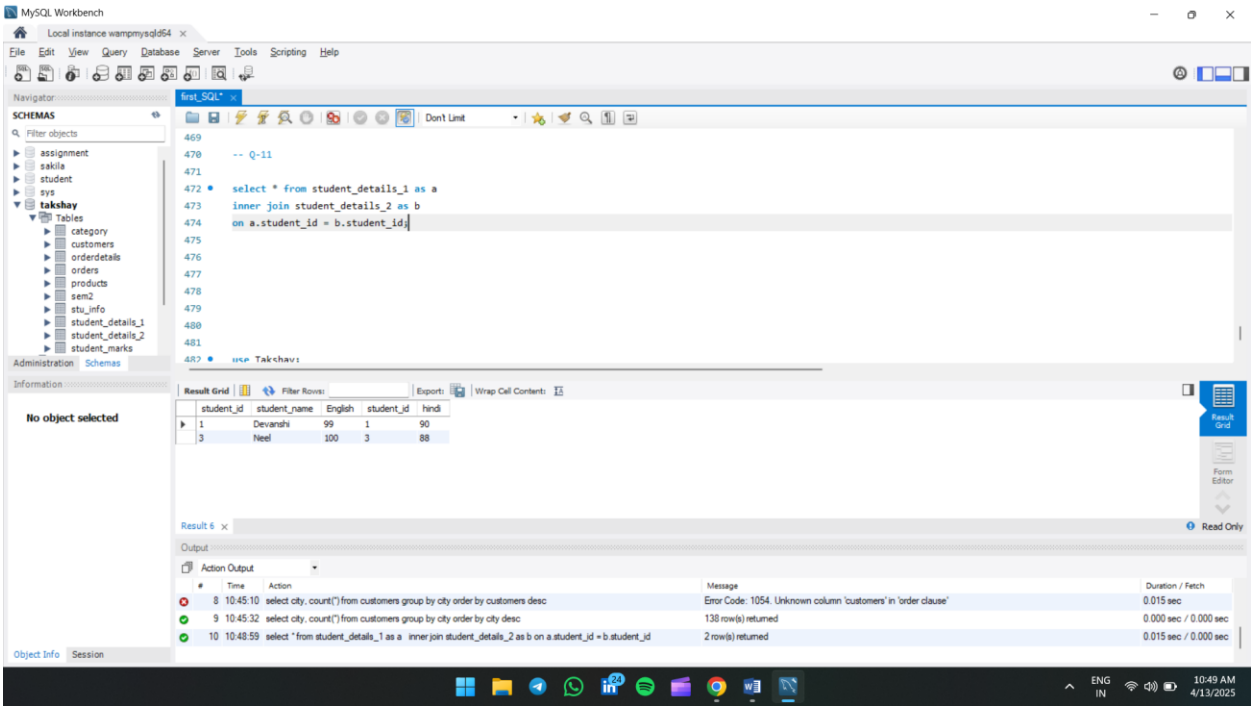


10. Practice using SQL clauses (ORDER BY) to filter, sort, and group data.

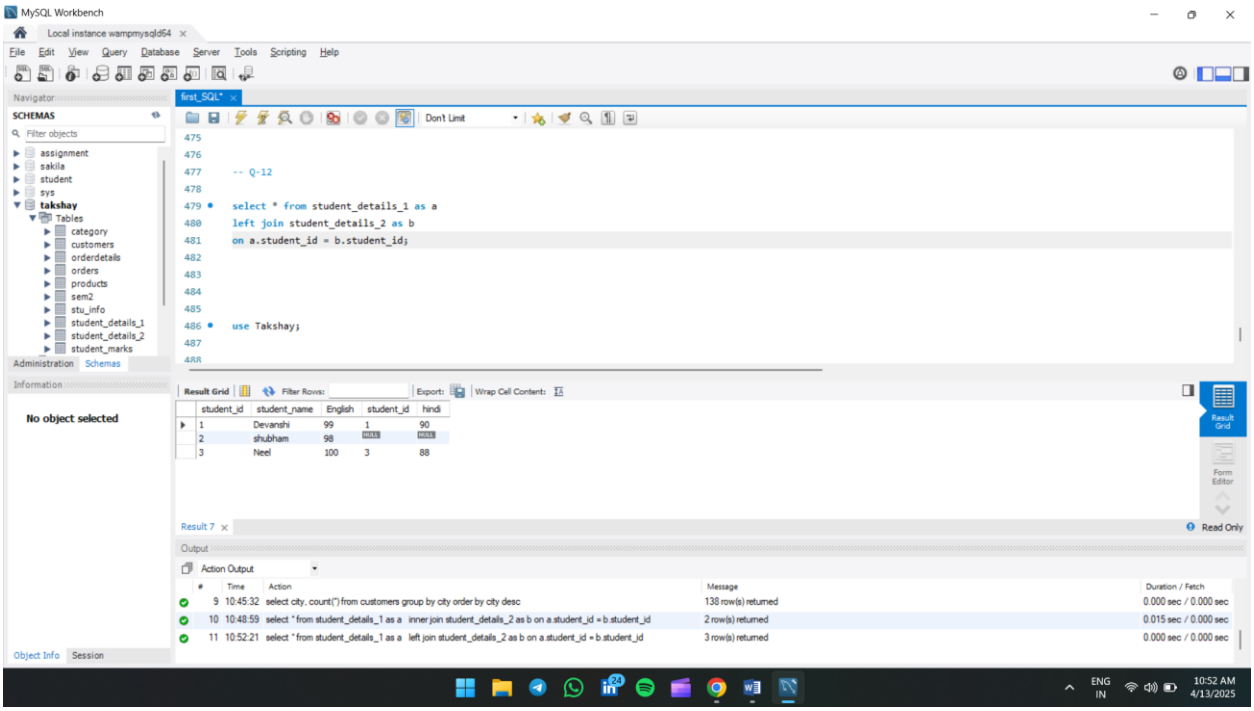




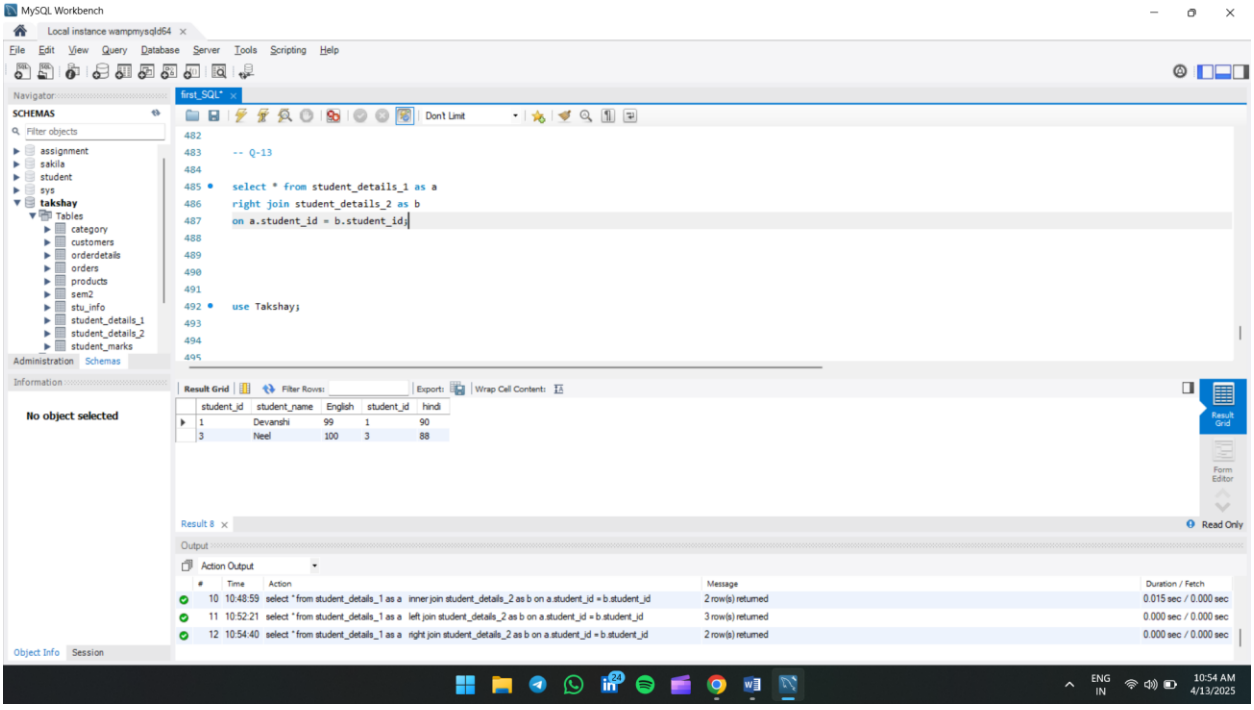
Q-11. Explore different JOIN operations (INNER JOIN) to retrieve data from multiple related tables.



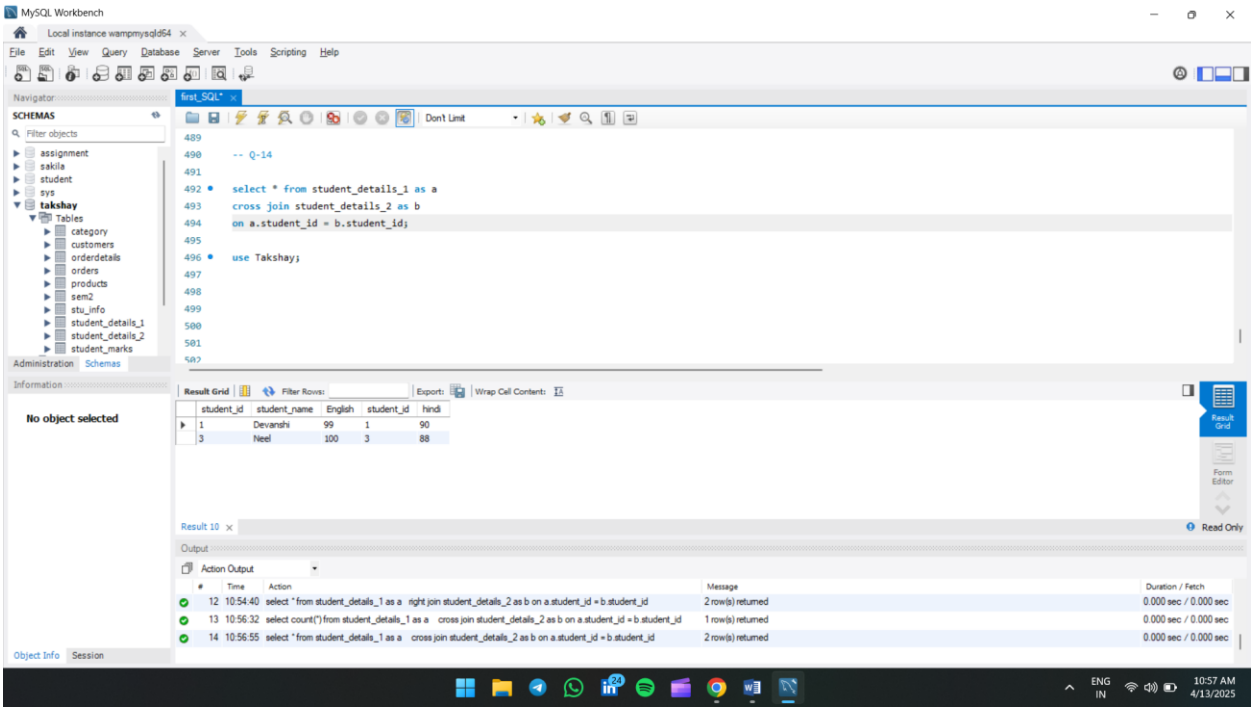
Q-12. Explore different JOIN operations (LEFT JOIN) to retrieve data from multiple related tables.



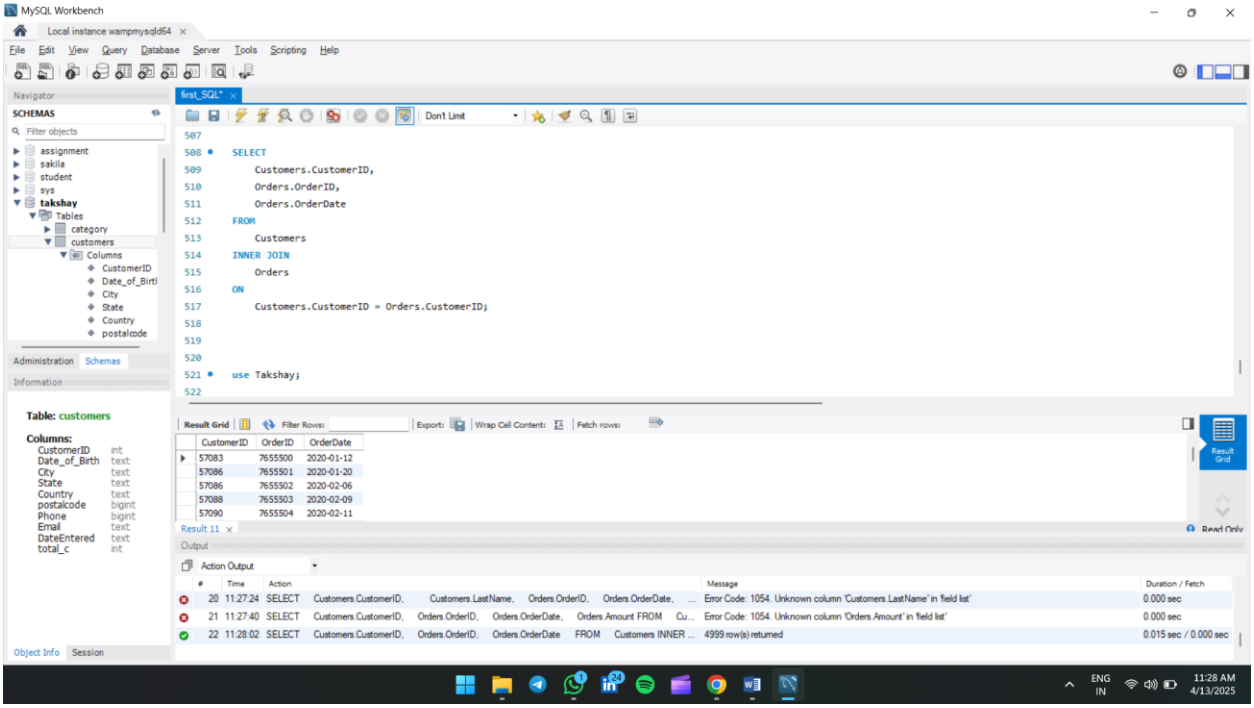
Q-13. Explore different JOIN operations (RIGHT JOIN) to retrieve data from multiple related tables.

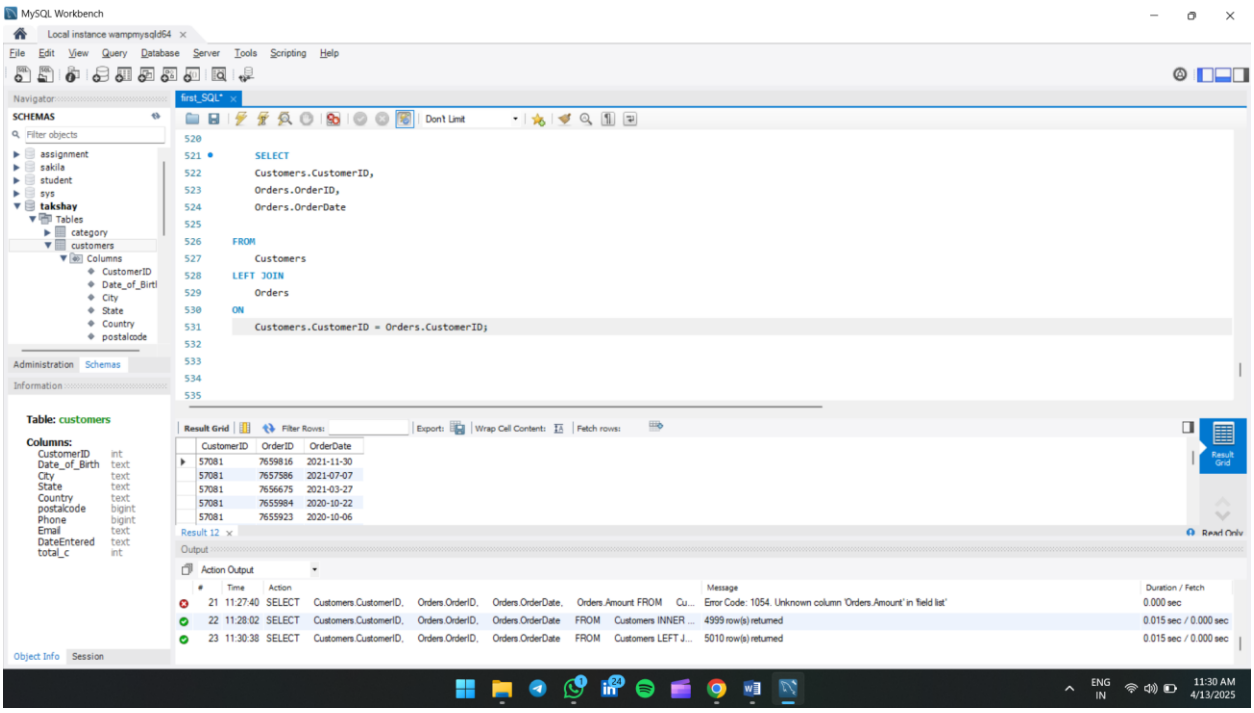


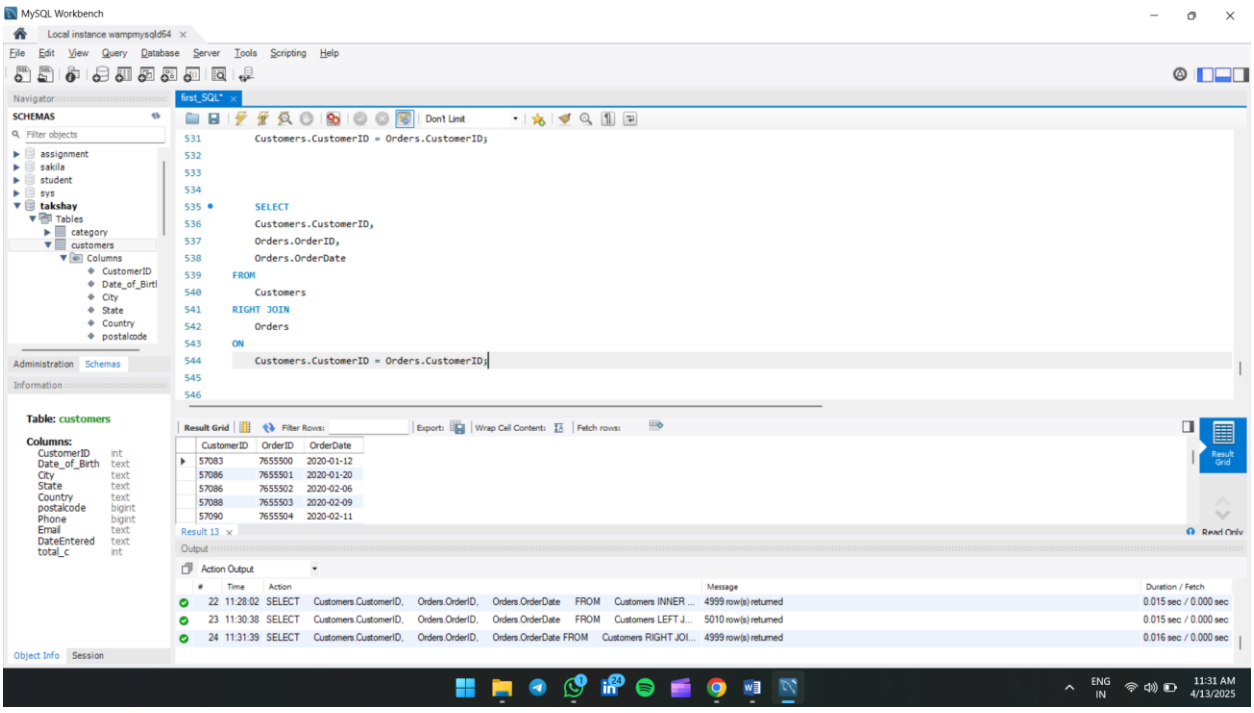
Q-14. Explore different JOIN operations (CROSS JOIN) to retrieve data from multiple related tables.



Q-15. Explore different JOIN operations (INNER JOIN, LEFT JOIN, RIGHT JOIN) to retrieve data from multiple related tables.




MySQL Workbench
Local instance wampmysqld64
File Edit View Query Database Server Tools Scripting Help
first_SQL*
SELECT
Customers.CustomerID,
Orders.OrderID,
Orders.OrderDate
FROM
Customers
LEFT JOIN
Orders
ON
Customers.CustomerID = Orders.CustomerID;
Result Grid
CustomerID OrderID OrderDate
57081 7659816 2021-11-30
57081 7657586 2021-07-07
57081 7656675 2021-03-27
57081 7655984 2020-10-22
57081 7655923 2020-10-06
Action Output
21 11:27:40 SELECT Customers.CustomerID, Orders.OrderID, Orders.OrderDate, Orders.Amount FROM Cu... Error Code: 1054. Unknown column 'Orders.Amount' in 'field list' 0.000 sec
22 11:28:02 SELECT Customers.CustomerID, Orders.OrderID, Orders.OrderDate FROM Customers INNER ... 4999 row(s) returned 0.015 sec / 0.000 sec
23 11:30:38 SELECT Customers.CustomerID, Orders.OrderID, Orders.OrderDate FROM Customers LEFT J... 5010 row(s) returned 0.015 sec / 0.000 sec
Table: customers
Columns:
CustomerID int
Date_of_Birth text
City text
State text
Country text
postalcode bigint
Phone bigint
Email text
DateEntered text
total_c int
11:30 AM
4/13/2025


MySQL Workbench
Local instance wampmysqld64
File Edit View Query Database Server Tools Scripting Help
first_SQL*
Customers.CustomerID = Orders.CustomerID;
SELECT
Customers.CustomerID,
Orders.OrderID,
Orders.OrderDate
FROM
Customers
RIGHT JOIN
Orders
ON
Customers.CustomerID = Orders.CustomerID;
Result Grid
CustomerID OrderID OrderDate
57083 7655500 2020-01-12
57086 7655501 2020-01-20
57086 7655502 2020-02-06
57088 7655503 2020-02-09
57090 7655504 2020-02-11
Action Output
22 11:28:02 SELECT Customers.CustomerID, Orders.OrderID, Orders.OrderDate FROM Customers INNER ... 4999 row(s) returned 0.015 sec / 0.000 sec
23 11:30:38 SELECT Customers.CustomerID, Orders.OrderID, Orders.OrderDate FROM Customers LEFT J... 5010 row(s) returned 0.015 sec / 0.000 sec
24 11:31:39 SELECT Customers.CustomerID, Orders.OrderID, Orders.OrderDate FROM Customers RIGHT JOI... 4999 row(s) returned 0.016 sec / 0.000 sec
Table: customers
Columns:
CustomerID int
Date_of_Birth text
City text
State text
Country text
postalcode bigint
Phone bigint
Email text
DateEntered text
total_c int
11:31 AM
4/13/2025