Assignment-8

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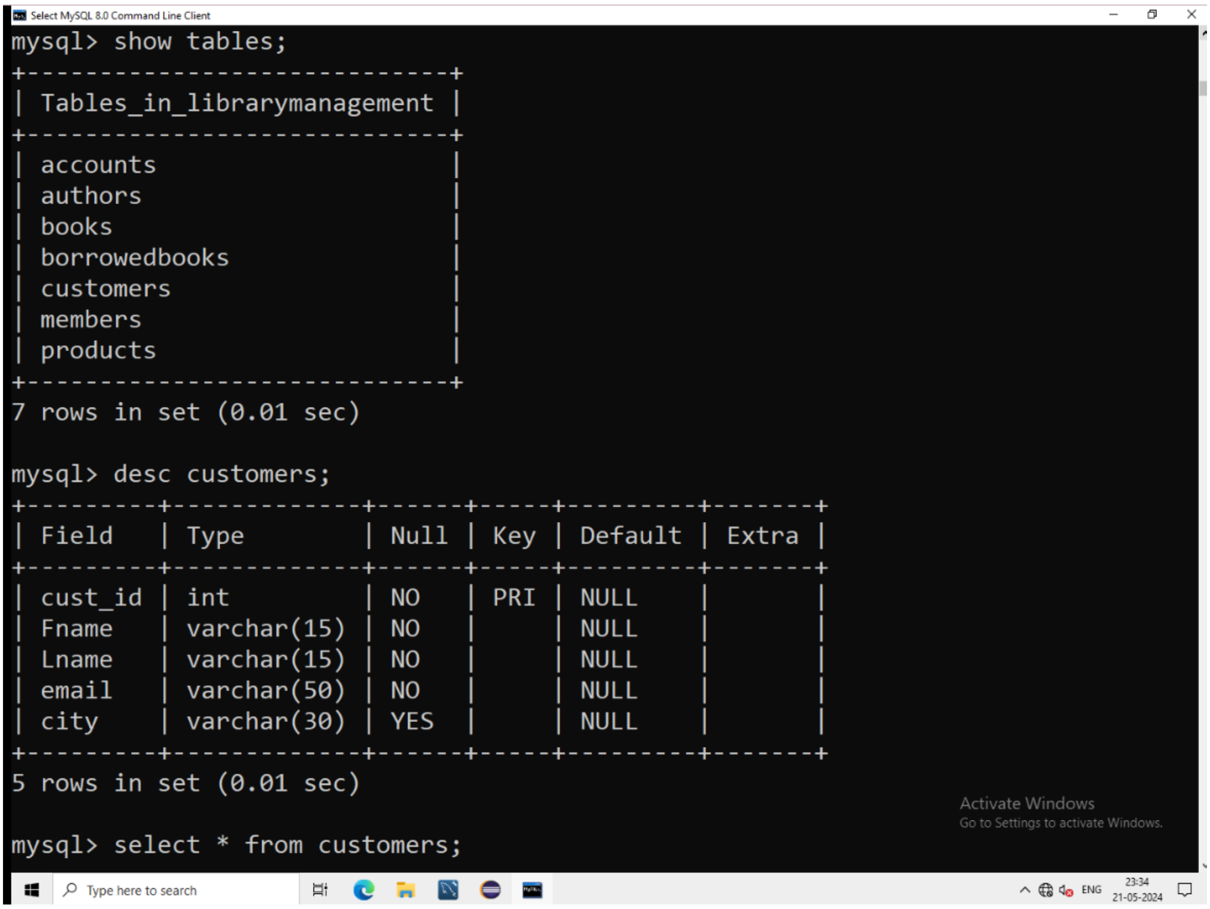
Assignment 1: Write a SELECT query to retrieve all columns from a 'customers' table, and modify it to return only the customer name and email address for customers in a specific city.

Query 1: Retrieve all columns from the 'customers' table

SELECT * FROM customers;

Query 2: Retrieve customer name and email address for customers in a specific city.

SELECT Fname, Lname, email FROM customers WHERE city = 'chennai';


Select MySQL 8.0 Command Line Client
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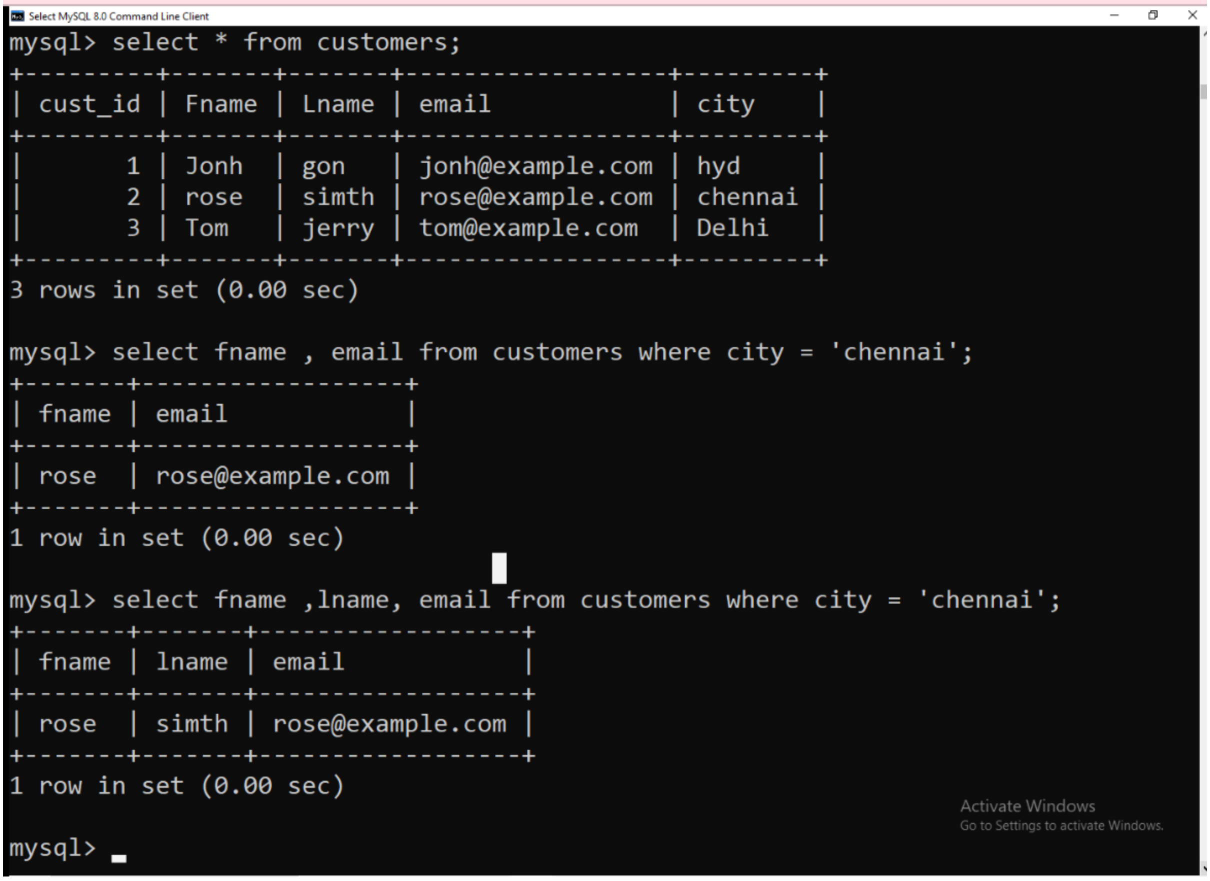
```
mysql> show tables;
+---------------------------+
| Tables_in_librarymanagement |
+---------------------------+
| accounts                  |
| authors                   |
| books                     |
| borrowedbooks             |
| customers                 |
| members                   |
| products                  |
+---------------------------+
7 rows in set (0.01 sec)

mysql> desc customers;
+---------+-------------+------+-----+---------+-------+
| Field   | Type        | Null | Key | Default | Extra |
+---------+-------------+------+-----+---------+-------+
| cust_id | int         | NO   | PRI | NULL    |       |
| Fname   | varchar(15) | NO   |     | NULL    |       |
| Lname   | varchar(15) | NO   |     | NULL    |       |
| email   | varchar(50) | NO   |     | NULL    |       |
| city    | varchar(30) | YES  |     | NULL    |       |
+---------+-------------+------+-----+---------+-------+
5 rows in set (0.01 sec)

mysql> select * from customers;
```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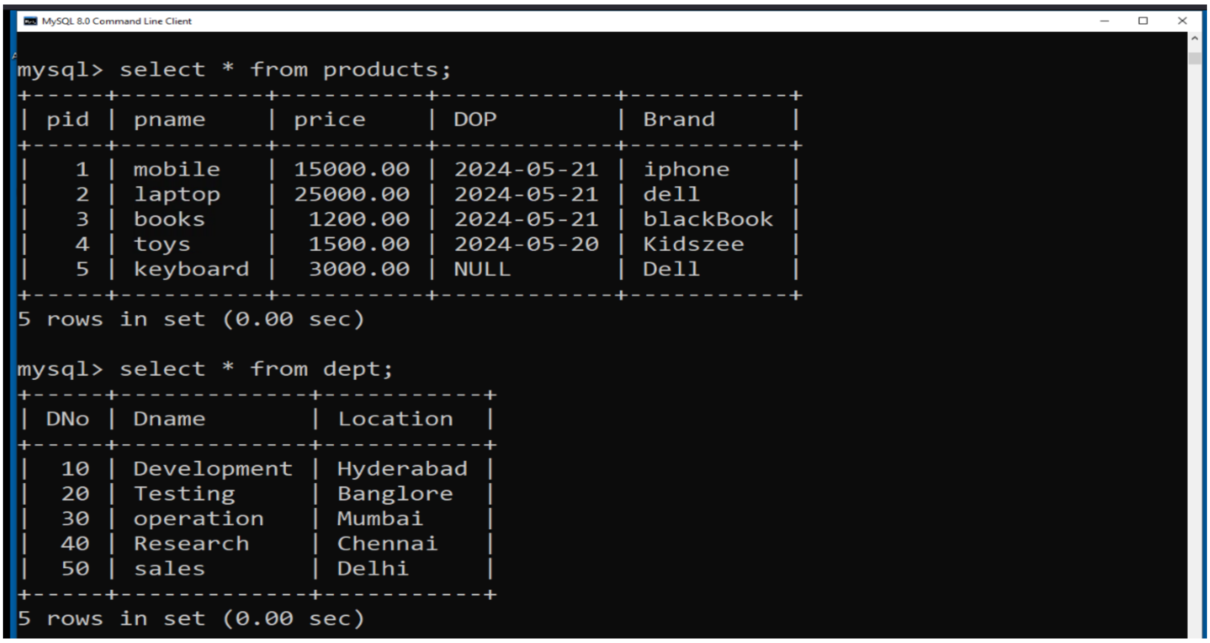
```
mysql> select * from customers;
+---------+-------+-------+-------------------+---------+
| cust_id | Fname | Lname | email             | city    |
+---------+-------+-------+-------------------+---------+
|       1 | Jonh  | gon   | jonh@example.com  | hyd     |
|       2 | rose  | simth | rose@example.com  | chennai |
|       3 | Tom   | jerry | tom@example.com   | Delhi   |
+---------+-------+-------+-------------------+---------+
3 rows in set (0.00 sec)

mysql> select fname , email from customers where city = 'chennai';
+-------+------------------+
| fname | email            |
+-------+------------------+
| rose  | rose@example.com |
+-------+------------------+
1 row in set (0.00 sec)

mysql> select fname ,lname, email from customers where city = 'chennai';
+-------+-------+------------------+
| fname | lname | email            |
+-------+-------+------------------+
| rose  | simth | rose@example.com |
+-------+-------+------------------+
1 row in set (0.00 sec)

mysql> _
```

Assignment 2: Craft a query using an INNER JOIN to combine 'orders' and 'customers' tables for customers in a specified region, and a LEFT JOIN to display all customers including those without orders.

Here I have create employee table and dept table .

Inserted some records into employee table and dept table.

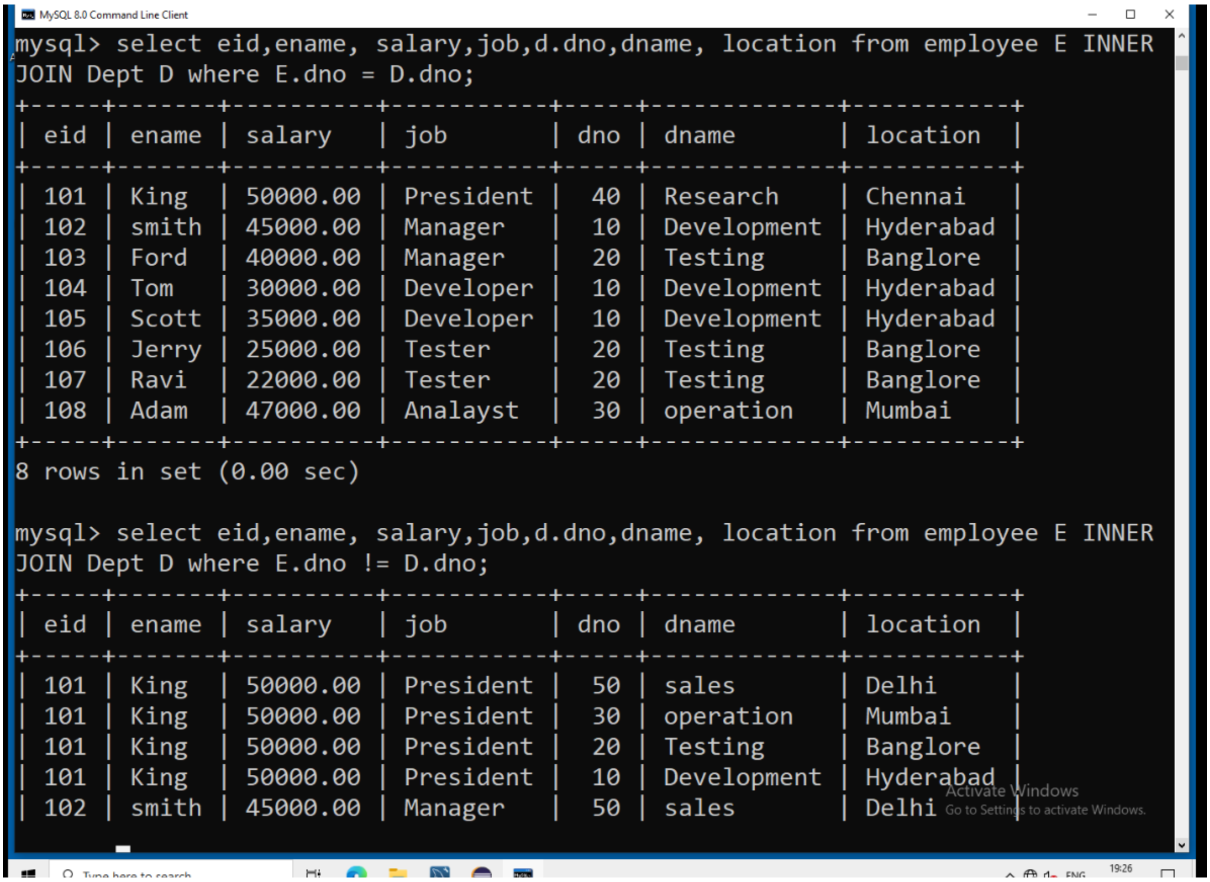


```
mysql> select * from products;
+-----+----------+----------+------------+------------+
| pid | pname    | price    | DOP        | Brand      |
+-----+----------+----------+------------+------------+
|   1 | mobile   | 15000.00 | 2024-05-21 | iphone     |
|   2 | laptop   | 25000.00 | 2024-05-21 | dell       |
|   3 | books    |  1200.00 | 2024-05-21 | blackBook  |
|   4 | toys     |  1500.00 | 2024-05-20 | Kidszee    |
|   5 | keyboard |  3000.00 | NULL       | Dell       |
+-----+----------+----------+------------+------------+
5 rows in set (0.00 sec)

mysql> select * from dept;
+-----+-------------+-----------+
| DNo | Dname       | Location  |
+-----+-------------+-----------+
|  10 | Development | Hyderabad |
|  20 | Testing     | Banglore  |
|  30 | operation   | Mumbai    |
|  40 | Research    | Chennai   |
|  50 | sales       | Delhi     |
+-----+-------------+-----------+
5 rows in set (0.00 sec)
```

Inner Join:

Select eid,ename,Salary,job,d.dno,dname,location from employee E INNER JOIN Dept D where E.dno = D.dno;

Select eid,ename,Salary,job,d.dno,dname,location from employee E INNER JOIN Dept D where E.dno != D.dno;


MySQL 8.0 Command Line Client
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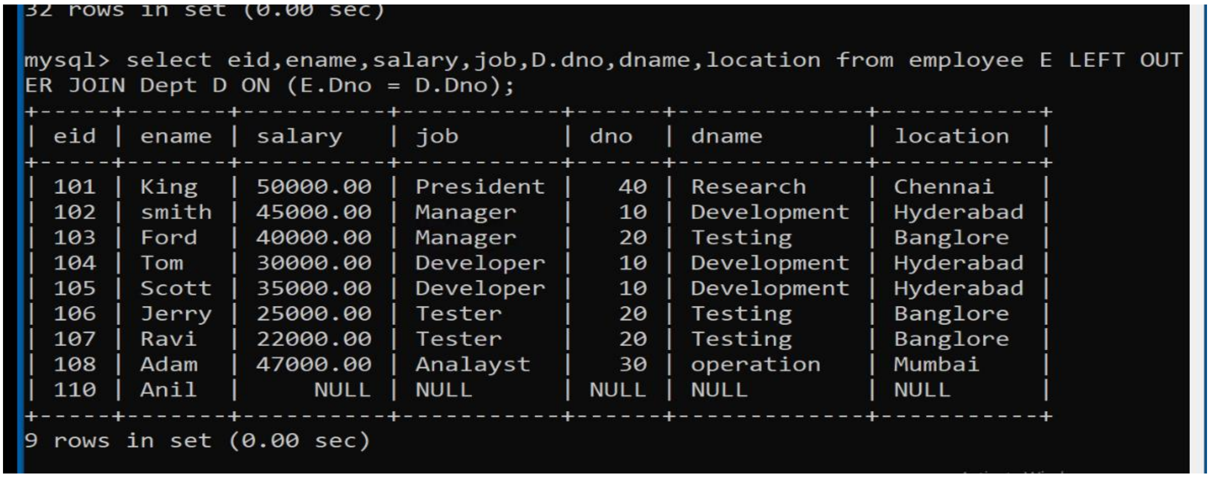
```
mysql> select eid,ename, salary,job,d.dno,dname, location from employee E INNER
JOIN Dept D where E.dno = D.dno;
+-----+-------+----------+-----------+-----+-------------+-----------+
| eid | ename | salary   | job       | dno | dname       | location  |
+-----+-------+----------+-----------+-----+-------------+-----------+
| 101 | King  | 50000.00 | President |  40 | Research    | Chennai   |
| 102 | smith | 45000.00 | Manager   |  10 | Development | Hyderabad |
| 103 | Ford  | 40000.00 | Manager   |  20 | Testing     | Banglore  |
| 104 | Tom   | 30000.00 | Developer |  10 | Development | Hyderabad |
| 105 | Scott | 35000.00 | Developer |  10 | Development | Hyderabad |
| 106 | Jerry | 25000.00 | Tester    |  20 | Testing     | Banglore  |
| 107 | Ravi  | 22000.00 | Tester    |  20 | Testing     | Banglore  |
| 108 | Adam  | 47000.00 | Analayst  |  30 | operation   | Mumbai    |
+-----+-------+----------+-----------+-----+-------------+-----------+
8 rows in set (0.00 sec)

mysql> select eid,ename, salary,job,d.dno,dname, location from employee E INNER
JOIN Dept D where E.dno != D.dno;
+-----+-------+----------+-----------+-----+-------------+-----------+
| eid | ename | salary   | job       | dno | dname       | location  |
+-----+-------+----------+-----------+-----+-------------+-----------+
| 101 | King  | 50000.00 | President |  50 | sales       | Delhi     |
| 101 | King  | 50000.00 | President |  30 | operation   | Mumbai    |
| 101 | King  | 50000.00 | President |  20 | Testing     | Banglore  |
| 101 | King  | 50000.00 | President |  10 | Development | Hyderabad |
| 102 | smith | 45000.00 | Manager   |  50 | sales       | Delhi     |
```

Left Outer Join:

Select eid,ename,salary,job,D.dno,dname,location from employee E left outer join Dept D ON (E.DNo = D.DNo);



```
32 rows in set (0.00 sec)

mysql> select eid,ename,salary,job,D.dno,dname,location from employee E LEFT OUT
ER JOIN Dept D ON (E.Dno = D.Dno);
+-----+-------+----------+-----------+------+-------------+-----------+
| eid | ename | salary   | job       | dno  | dname       | location  |
+-----+-------+----------+-----------+------+-------------+-----------+
| 101 | King  | 50000.00 | President |   40 | Research    | Chennai   |
| 102 | smith | 45000.00 | Manager   |   10 | Development | Hyderabad |
| 103 | Ford  | 40000.00 | Manager   |   20 | Testing     | Banglore  |
| 104 | Tom   | 30000.00 | Developer |   10 | Development | Hyderabad |
| 105 | Scott | 35000.00 | Developer |   10 | Development | Hyderabad |
| 106 | Jerry | 25000.00 | Tester    |   20 | Testing     | Banglore  |
| 107 | Ravi  | 22000.00 | Tester    |   20 | Testing     | Banglore  |
| 108 | Adam  | 47000.00 | Analayst  |   30 | operation   | Mumbai    |
| 110 | Anil  |     NULL | NULL      | NULL | NULL        | NULL      |
+-----+-------+----------+-----------+------+-------------+-----------+
9 rows in set (0.00 sec)
```

inner join

select c. customername, c. city, o. orderitem, o. price from customers c inner join orders o on (c. customerid=o. customerid);

```
/* output

customername city               orderitem       price
Ravi                    Hyderabad       Mobile          23500

Laya                    Chennai         Laptop          64500

Ravi                    Hyderabad       Shoe            2000

Nani                    Vizag           Watch           4600
*/
```

select c. customername, o. orderitem, o. price,o.orderdate from customers c inner join orders o on (c.customerid=o.customerid);

select c.customername,c.contactno,c.city,o.orderitem from customers c inner join orders o on (c.customerid=o.customerid) where OrderItem='shoe';

Left Join

select c. customerid, c.customername,c.city,o.orderitem,o.price from customers c left join orders o on (c. customerid=o. customerid);

```
/* output

customerid      customername city               order item      price

8241            Ravi                    Hyderabad       Shoe            2000

8241            Ravi                    Hyderabad       Mobile          23500

8242            Laya                    Chennai         Laptop          64500

8243            Nani                    Vizag           Watch   4600

8244            Bhavya                  Bengaluru       NULL            NULL

8245            Sravya          Hyderabad       NULL            NULL

*/
```

select c. customername, o. orderitem,o.price,o.orderdate from customers c left join orders o on (c. customerid=o.customerid);

select c. customername, c.contactno,c.city,o.orderitem from customers c left join orders o on (c. customerid=o.customerid) where OrderItem='shoe';

select c.customername,c.contactno,c.city,o.orderitem from customers c left join orders o on (c.customerid=o.customerid) where city='vizag';

Assignment 3: Utilize a subquery to find customers who have placed orders above the average order value, and write a UNION query to combine two SELECT statements with the same number of columns.

Here I have create employee table and dept table .

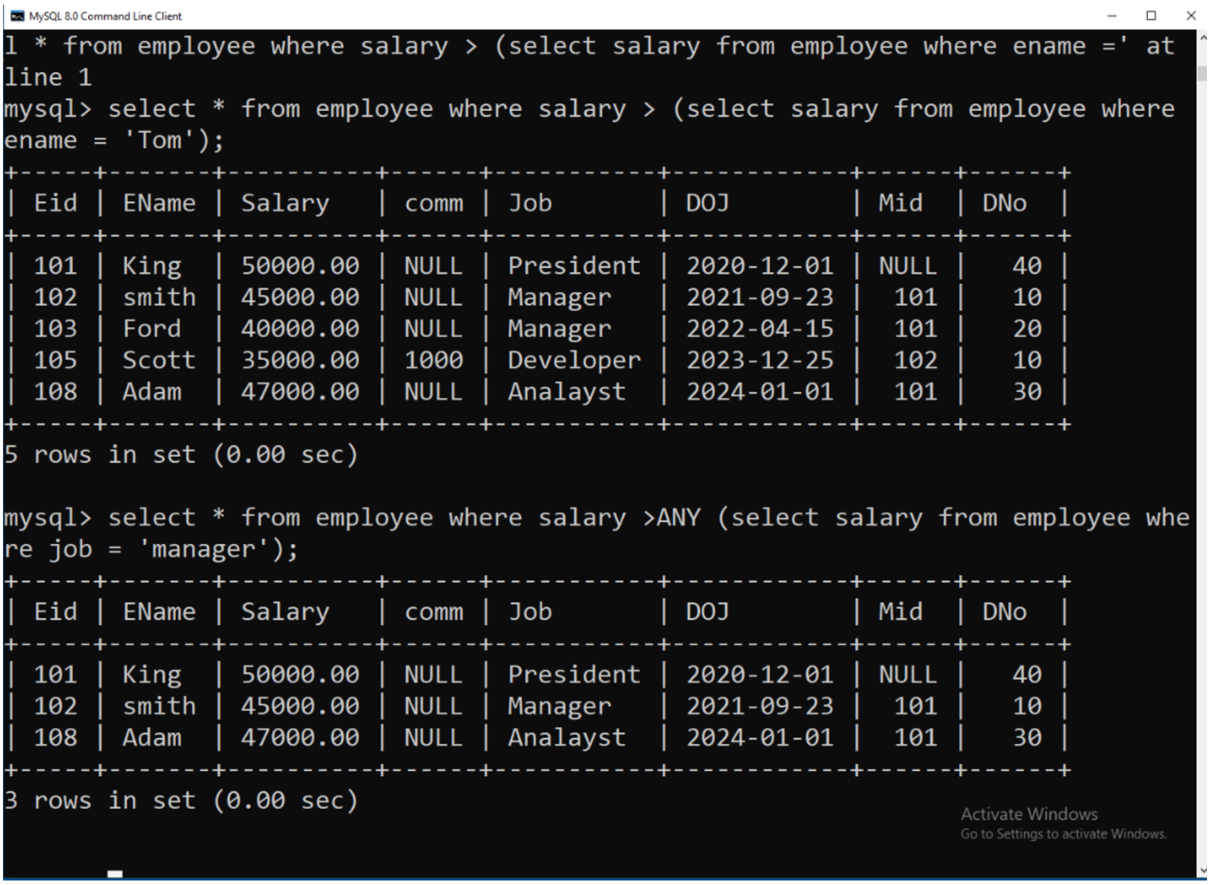
Inserted some records into employee table and dept table.

SubQuery:

sub query a query inside another query

select * from employee where salary > (select salary from employee where ename = ‘Tom’);

select * from employee where salary >ANY (Select salary from employee where job = ‘manager’);



MySQL 8.0 Command Line Client

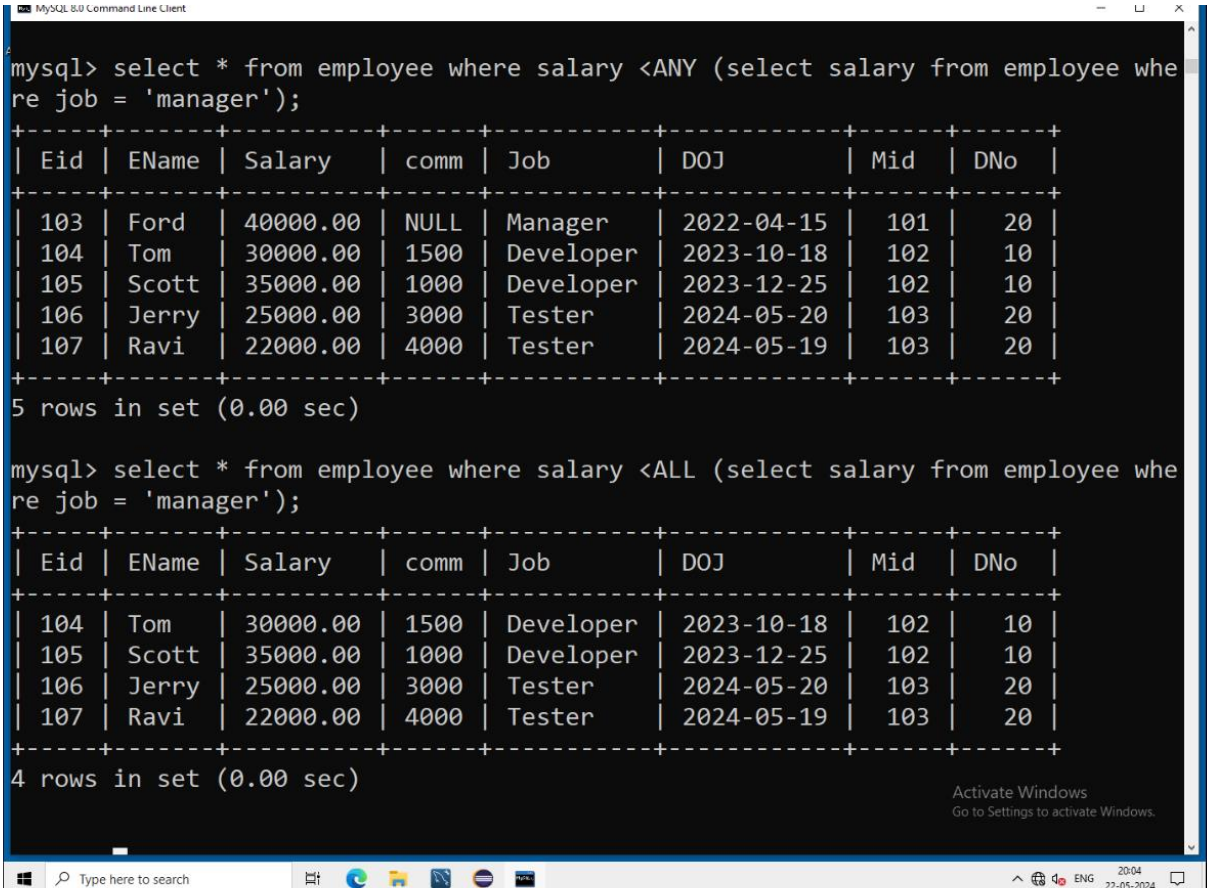
```
l * from employee where salary > (select salary from employee where ename =' at
line 1
mysql> select * from employee where salary > (select salary from employee where
ename = 'Tom');
+-----+-------+----------+------+-----------+------------+------+------+
| Eid | EName | Salary   | comm | Job       | DOJ        | Mid  | DNo  |
+-----+-------+----------+------+-----------+------------+------+------+
| 101 | King  | 50000.00 | NULL | President | 2020-12-01 | NULL |   40 |
| 102 | smith | 45000.00 | NULL | Manager   | 2021-09-23 |  101 |   10 |
| 103 | Ford  | 40000.00 | NULL | Manager   | 2022-04-15 |  101 |   20 |
| 105 | Scott | 35000.00 | 1000 | Developer | 2023-12-25 |  102 |   10 |
| 108 | Adam  | 47000.00 | NULL | Analayst  | 2024-01-01 |  101 |   30 |
+-----+-------+----------+------+-----------+------------+------+------+
5 rows in set (0.00 sec)

mysql> select * from employee where salary >ANY (select salary from employee whe
re job = 'manager');
+-----+-------+----------+------+-----------+------------+------+------+
| Eid | EName | Salary   | comm | Job       | DOJ        | Mid  | DNo  |
+-----+-------+----------+------+-----------+------------+------+------+
| 101 | King  | 50000.00 | NULL | President | 2020-12-01 | NULL |   40 |
| 102 | smith | 45000.00 | NULL | Manager   | 2021-09-23 |  101 |   10 |
| 108 | Adam  | 47000.00 | NULL | Analayst  | 2024-01-01 |  101 |   30 |
+-----+-------+----------+------+-----------+------------+------+------+
3 rows in set (0.00 sec)
```

select * from employee where salary <ANY (Select salary from employee where job = ‘manager’);

select * from employee where salary >ALL (Select salary from employee where job = ‘manager’);

select * from employee where salary <ALL (Select salary from employee where job = ‘manager’);


MySQL 8.0 Command Line Client
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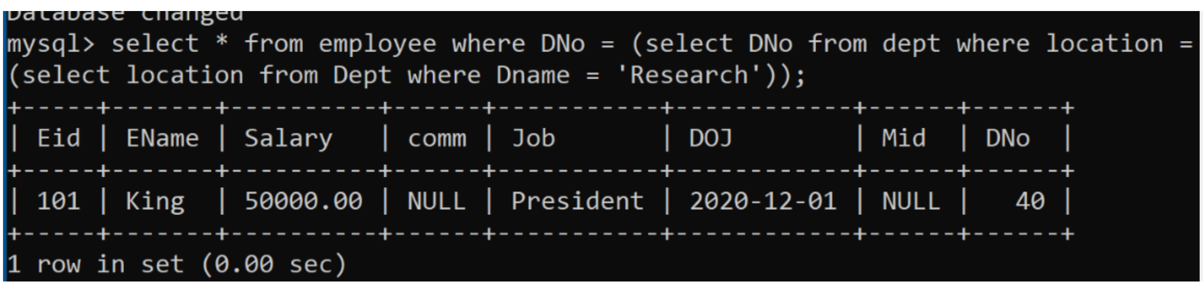
```
mysql> select * from employee where salary <ANY (select salary from employee whe
re job = 'manager');
+-----+-------+----------+------+-----------+------------+------+------+
| Eid | EName | Salary   | comm | Job       | DOJ        | Mid  | DNo  |
+-----+-------+----------+------+-----------+------------+------+------+
| 103 | Ford  | 40000.00 | NULL | Manager   | 2022-04-15 |  101 |   20 |
| 104 | Tom   | 30000.00 | 1500 | Developer | 2023-10-18 |  102 |   10 |
| 105 | Scott | 35000.00 | 1000 | Developer | 2023-12-25 |  102 |   10 |
| 106 | Jerry | 25000.00 | 3000 | Tester    | 2024-05-20 |  103 |   20 |
| 107 | Ravi  | 22000.00 | 4000 | Tester    | 2024-05-19 |  103 |   20 |
+-----+-------+----------+------+-----------+------------+------+------+
5 rows in set (0.00 sec)

mysql> select * from employee where salary <ALL (select salary from employee whe
re job = 'manager');
+-----+-------+----------+------+-----------+------------+------+------+
| Eid | EName | Salary   | comm | Job       | DOJ        | Mid  | DNo  |
+-----+-------+----------+------+-----------+------------+------+------+
| 104 | Tom   | 30000.00 | 1500 | Developer | 2023-10-18 |  102 |   10 |
| 105 | Scott | 35000.00 | 1000 | Developer | 2023-12-25 |  102 |   10 |
| 106 | Jerry | 25000.00 | 3000 | Tester    | 2024-05-20 |  103 |   20 |
| 107 | Ravi  | 22000.00 | 4000 | Tester    | 2024-05-19 |  103 |   20 |
+-----+-------+----------+------+-----------+------------+------+------+
4 rows in set (0.00 sec)
```

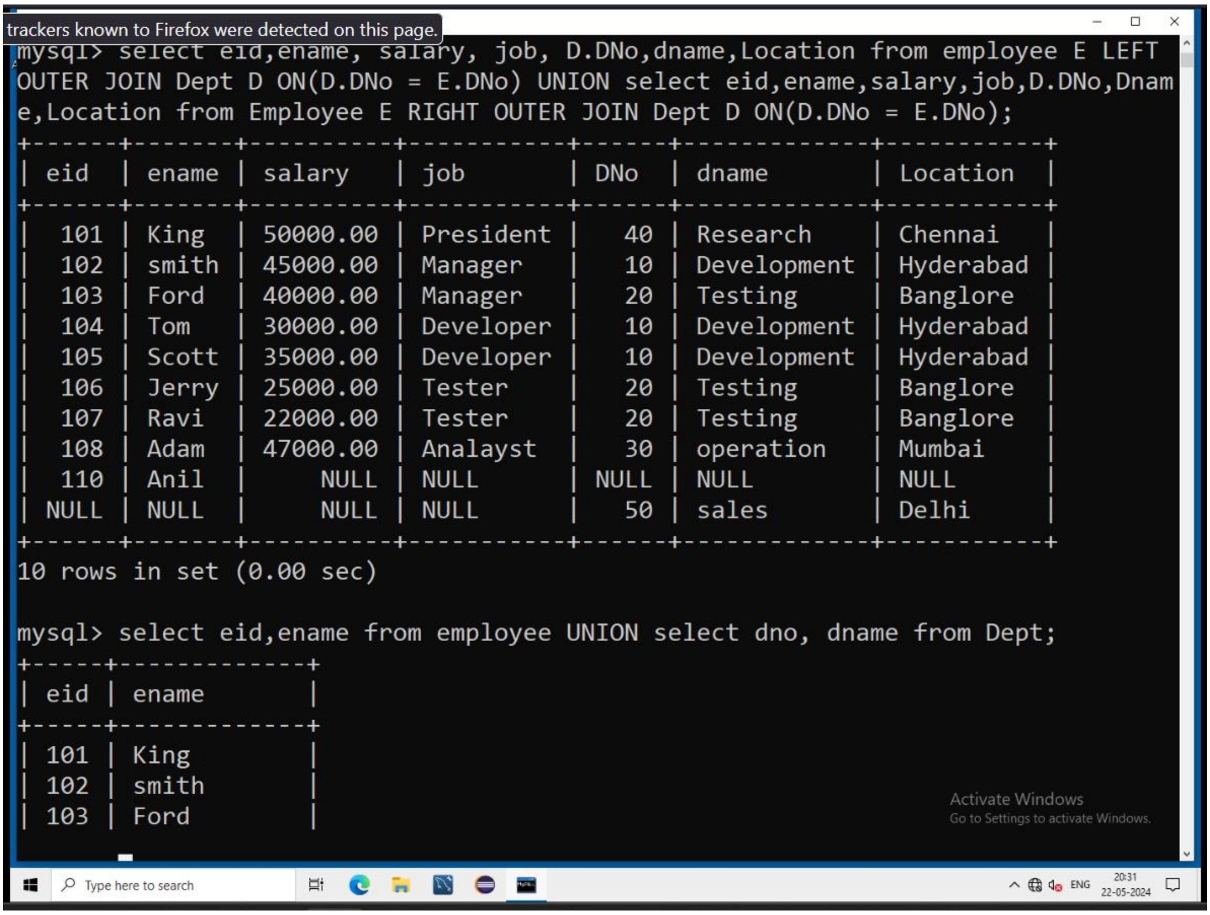


```
Database changed
mysql> select * from employee where DNo = (select DNo from dept where location =
(select location from Dept where Dname = 'Research'));
+-----+-------+----------+------+-----------+------------+------+------+
| Eid | EName | Salary   | comm | Job       | DOJ        | Mid  | DNo  |
+-----+-------+----------+------+-----------+------------+------+------+
| 101 | King  | 50000.00 | NULL | President | 2020-12-01 | NULL |   40 |
+-----+-------+----------+------+-----------+------------+------+------+
1 row in set (0.00 sec)
```

Union:

Select eid,ename ,salary ,job,D.dno,dname,location from employee E Left outer Join dept D ON(D.No = E.No) UNION select eid, ename, salary, job,D.DNo , dname, location from employee E Right outer Join Dept ON(D.No =E.No);

Select eid, ename from employee UNION select dno, dname from Dept;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22-05-2024

```
mysql> select eid,ename, salary, job, D.DNo,dname,Location from employee E LEFT
OUTER JOIN Dept D ON(D.DNo = E.DNo) UNION select eid,ename,salary,job,D.DNo,Dnam
e,Location from Employee E RIGHT OUTER JOIN Dept D ON(D.DNo = E.DNo);
+------+-------+----------+-----------+------+-------------+-----------+
| eid  | ename | salary   | job       | DNo  | dname       | Location  |
+------+-------+----------+-----------+------+-------------+-----------+
|  101 | King  | 50000.00 | President |   40 | Research    | Chennai   |
|  102 | smith | 45000.00 | Manager   |   10 | Development | Hyderabad |
|  103 | Ford  | 40000.00 | Manager   |   20 | Testing     | Banglore  |
|  104 | Tom   | 30000.00 | Developer |   10 | Development | Hyderabad |
|  105 | Scott | 35000.00 | Developer |   10 | Development | Hyderabad |
|  106 | Jerry | 25000.00 | Tester    |   20 | Testing     | Banglore  |
|  107 | Ravi  | 22000.00 | Tester    |   20 | Testing     | Banglore  |
|  108 | Adam  | 47000.00 | Analayst  |   30 | operation   | Mumbai    |
|  110 | Anil  |     NULL | NULL      | NULL | NULL        | NULL      |
| NULL | NULL  |     NULL | NULL      |   50 | sales       | Delhi     |
+------+-------+----------+-----------+------+-------------+-----------+
10 rows in set (0.00 sec)

mysql> select eid,ename from employee UNION select dno, dname from Dept;
+-----+-------------+
| eid | ename       |
+-----+-------------+
| 101 | King        |
| 102 | smith       |
| 103 | Ford        |
```

Sub query:

select c. customerid, c. customername, o. orderid, o. OrderItem, orderable from customers c inner join orders o on c. CustomerId=o.CustomerId where orderable > (select avg (order value) from orders);

/* output

customerid	customername	orderid	OrderItem	order value
8242	Laya	128	Laptop	17
8241	Ravi	129	Shoe	25

*/

select c. customername, o. orderid, o. OrderItem, o. price from customers c inner join orders o on c. CustomerId=o.CustomerId where o.price > (select min(price) from orders);

/* output

```
customername    orderid                 OrderItem         price

Ravi                        121                 Mobile            23500

Laya                        128                 Laptop            64500

Nani                        130                 Watch             4600

*/
```

Union:

union will execute two select queries

```
select c. customername, c. city, o. orderitem, o. price from customers c inner join orders o
on (c. customerid=o. customerid) union
select c. customername, c. contactno, city, o. orderitem from customers c cross join orders o on (c.
customerid=o. customerid) where OrderItem='shoe';
```

```
/* output
customername city                orderitem         price
Ravi                        Hyderabad       Mobile            23500

Laya                        Chennai         Laptop            64500

Ravi                        Hyderabad       Shoe              2000

Nani                        Vizag           Watch             4600
*/
```

Assignment 4: Compose SQL statements to BEGIN a transaction, INSERT a new record into the 'orders' table, COMMIT the transaction, then UPDATE the 'products' table, and ROLLBACK the transaction.

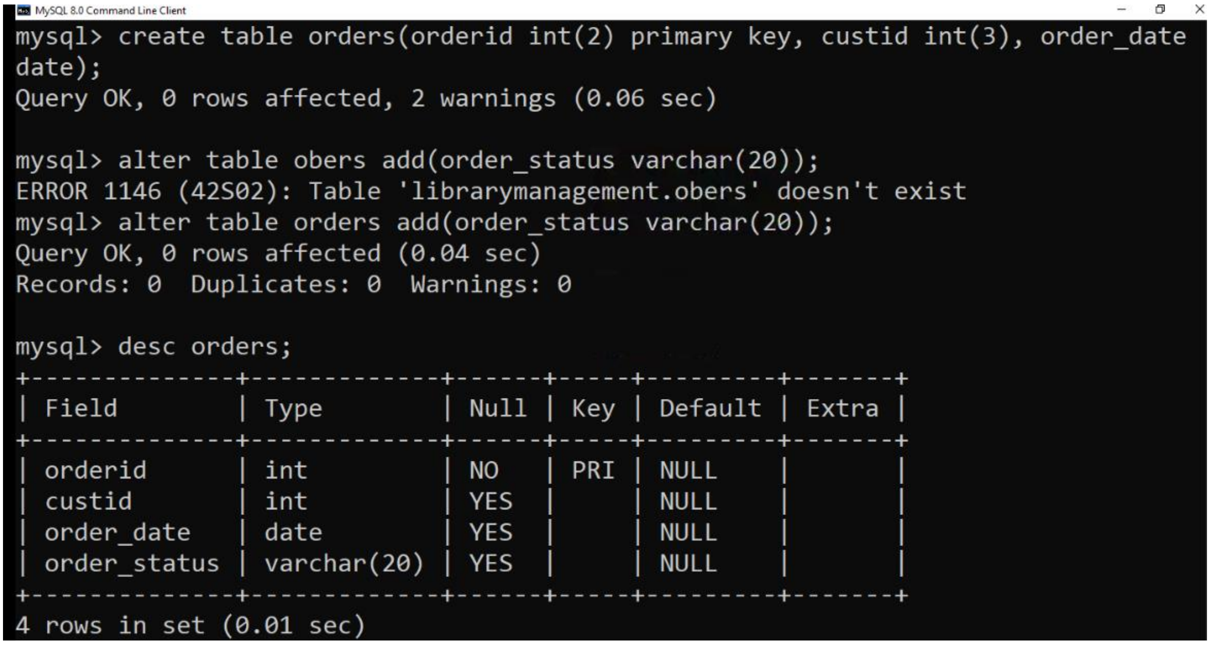
Create orders table and insert values into orders table:

```
CREATE TABLE orders (

  order_id INT(2) PRIMARY Key,

  customer_id INT(3),

  order_date DATE ,

  order_total DECIMAL(10,2) ,
```

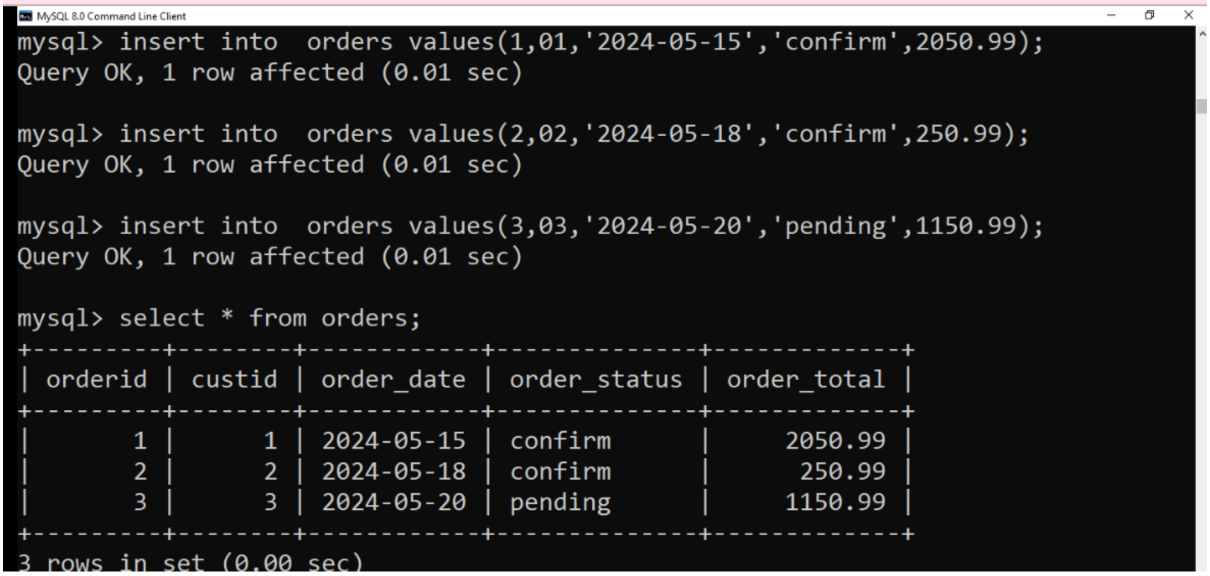
order_status VARCHAR(50)

);

Insert into orders values(1,01,’2024-05-15’, 2025.99, ‘confirm’), (2,02,’2024-05-18’ 250.99,’confirm’),(3,03,’2024-05-20’,1050.00,’pending’));



```
mysql> create table orders(orderid int(2) primary key, custid int(3), order_date
date);
Query OK, 0 rows affected, 2 warnings (0.06 sec)

mysql> alter table obers add(order_status varchar(20));
ERROR 1146 (42S02): Table 'librarymanagement.obers' doesn't exist
mysql> alter table orders add(order_status varchar(20));
Query OK, 0 rows affected (0.04 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> desc orders;
+--------------+-------------+------+-----+---------+-------+
| Field        | Type        | Null | Key | Default | Extra |
+--------------+-------------+------+-----+---------+-------+
| orderid      | int         | NO   | PRI | NULL    |       |
| custid       | int         | YES  |     | NULL    |       |
| order_date   | date        | YES  |     | NULL    |       |
| order_status | varchar(20) | YES  |     | NULL    |       |
+--------------+-------------+------+-----+---------+-------+
4 rows in set (0.01 sec)
```

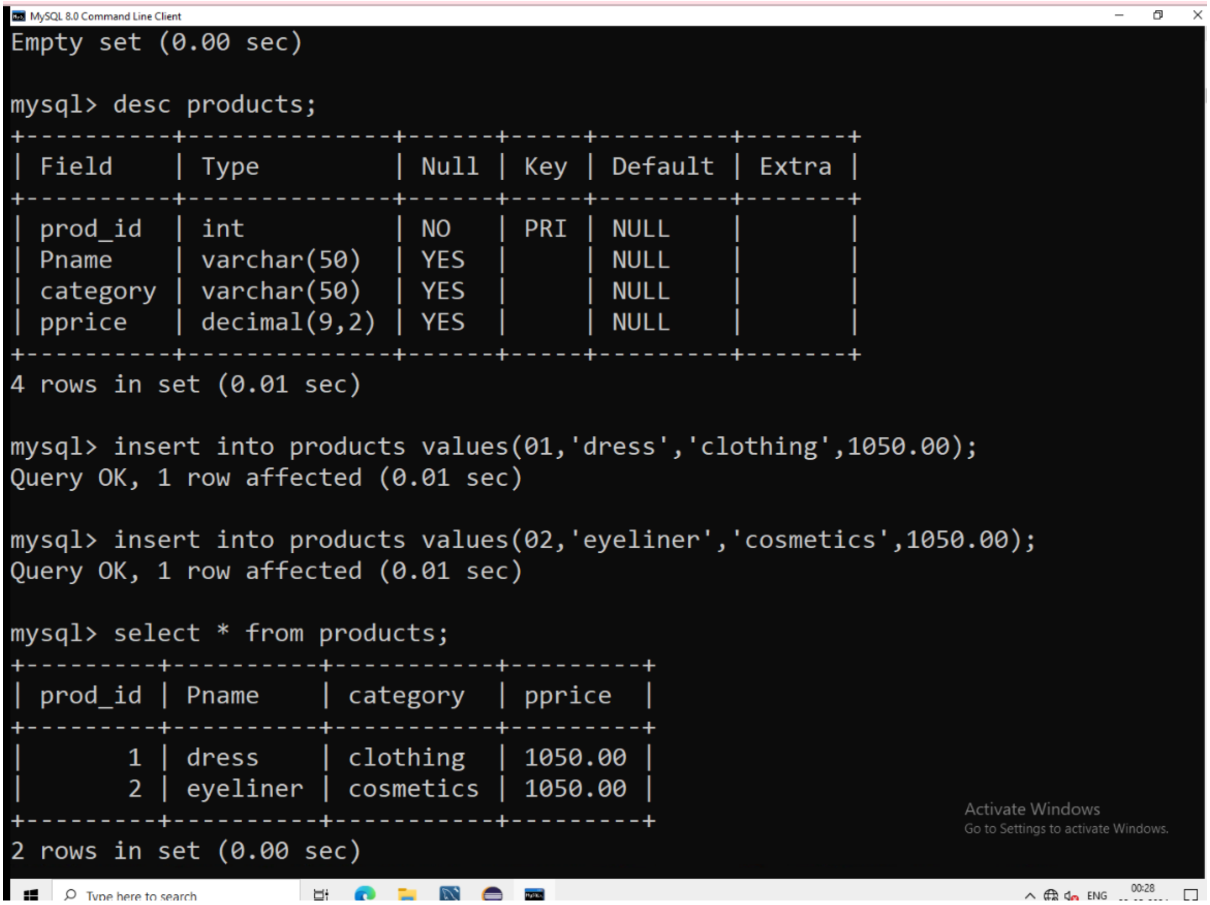


```
mysql> insert into  orders values(1,01,'2024-05-15','confirm',2050.99);
Query OK, 1 row affected (0.01 sec)

mysql> insert into  orders values(2,02,'2024-05-18','confirm',250.99);
Query OK, 1 row affected (0.01 sec)

mysql> insert into  orders values(3,03,'2024-05-20','pending',1150.99);
Query OK, 1 row affected (0.01 sec)

mysql> select * from orders;
+---------+--------+------------+--------------+-------------+
| orderid | custid | order_date | order_status | order_total |
+---------+--------+------------+--------------+-------------+
|       1 |      1 | 2024-05-15 | confirm      |     2050.99 |
|       2 |      2 | 2024-05-18 | confirm      |      250.99 |
|       3 |      3 | 2024-05-20 | pending      |     1150.99 |
+---------+--------+------------+--------------+-------------+
3 rows in set (0.00 sec)
```

Create a products table and insert values into products table :

Create table products(prod_id int(5) primary key, pname varchar(20), category varchar(50), pprice decimal(7,2));

Insert into products values(1,’dress’,’clothing’,1050.00), (2,’eyeliner’,’cosmetics’,1050.99);


MySQL 8.0 Command Line Client
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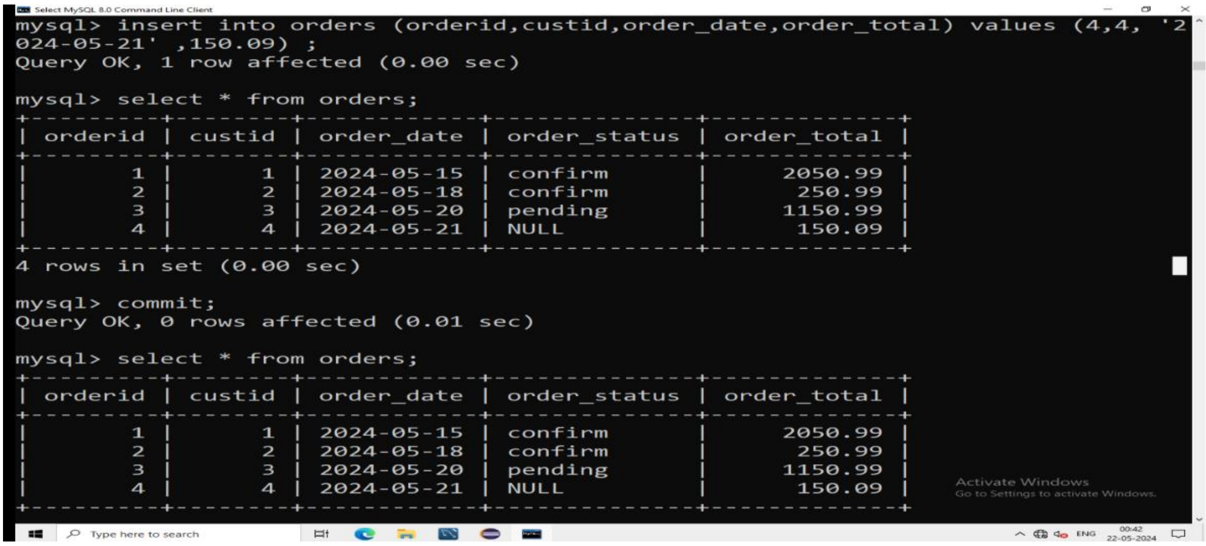
```
Empty set (0.00 sec)

mysql> desc products;
+----------+--------------+------+-----+---------+-------+
| Field    | Type         | Null | Key | Default | Extra |
+----------+--------------+------+-----+---------+-------+
| prod_id  | int          | NO   | PRI | NULL    |       |
| Pname    | varchar(50)  | YES  |     | NULL    |       |
| category | varchar(50)  | YES  |     | NULL    |       |
| pprice   | decimal(9,2) | YES  |     | NULL    |       |
+----------+--------------+------+-----+---------+-------+
4 rows in set (0.01 sec)

mysql> insert into products values(01,'dress','clothing',1050.00);
Query OK, 1 row affected (0.01 sec)

mysql> insert into products values(02,'eyeliner','cosmetics',1050.00);
Query OK, 1 row affected (0.01 sec)

mysql> select * from products;
+---------+----------+-----------+---------+
| prod_id | Pname    | category  | pprice  |
+---------+----------+-----------+---------+
|       1 | dress    | clothing  | 1050.00 |
|       2 | eyeliner | cosmetics | 1050.00 |
+---------+----------+-----------+---------+
2 rows in set (0.00 sec)
```

Start transaction;

Insert into orders (orderid,custid,order_date order_total) values (4,4,’2024-05-21’, 150.09);

Commit;


Select MySQL 8.0 Command Line Client
Activate Windows
Go to Settings to activate Windows.
Type here to search
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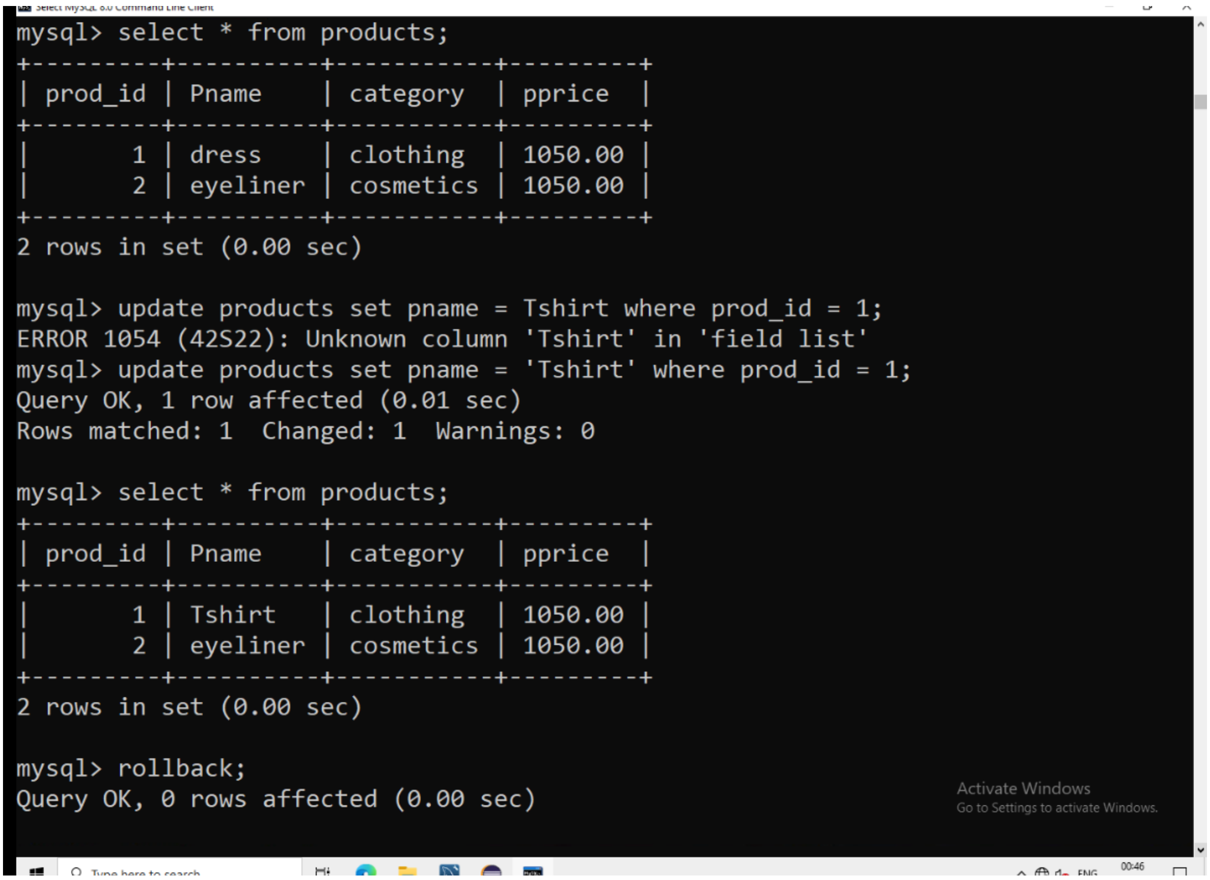
22-05-2024

```
mysql> insert into orders (orderid,custid,order_date,order_total) values (4,4, '2
024-05-21' ,150.09) ;
Query OK, 1 row affected (0.00 sec)

mysql> select * from orders;
+---------+--------+------------+--------------+-------------+
| orderid | custid | order_date | order_status | order_total |
+---------+--------+------------+--------------+-------------+
|       1 |      1 | 2024-05-15 | confirm      |     2050.99 |
|       2 |      2 | 2024-05-18 | confirm      |      250.99 |
|       3 |      3 | 2024-05-20 | pending      |     1150.99 |
|       4 |      4 | 2024-05-21 | NULL         |      150.09 |
+---------+--------+------------+--------------+-------------+
4 rows in set (0.00 sec)

mysql> commit;
Query OK, 0 rows affected (0.01 sec)

mysql> select * from orders;
+---------+--------+------------+--------------+-------------+
| orderid | custid | order_date | order_status | order_total |
+---------+--------+------------+--------------+-------------+
|       1 |      1 | 2024-05-15 | confirm      |     2050.99 |
|       2 |      2 | 2024-05-18 | confirm      |      250.99 |
|       3 |      3 | 2024-05-20 | pending      |     1150.99 |
|       4 |      4 | 2024-05-21 | NULL         |      150.09 |
+---------+--------+------------+--------------+-------------+
```

Update products set pname = ‘tshirt’ where prod_id = 1;

Rollback;


Select MySQL 8.0 Command Line Client
Activate Windows
Go to Settings to activate Windows.
Type here to search
ENG
00:46

```
mysql> select * from products;
+---------+----------+-----------+---------+
| prod_id | Pname    | category  | pprice  |
+---------+----------+-----------+---------+
|       1 | dress    | clothing  | 1050.00 |
|       2 | eyeliner | cosmetics | 1050.00 |
+---------+----------+-----------+---------+
2 rows in set (0.00 sec)

mysql> update products set pname = Tshirt where prod_id = 1;
ERROR 1054 (42S22): Unknown column 'Tshirt' in 'field list'
mysql> update products set pname = 'Tshirt' where prod_id = 1;
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> select * from products;
+---------+----------+-----------+---------+
| prod_id | Pname    | category  | pprice  |
+---------+----------+-----------+---------+
|       1 | Tshirt   | clothing  | 1050.00 |
|       2 | eyeliner | cosmetics | 1050.00 |
+---------+----------+-----------+---------+
2 rows in set (0.00 sec)

mysql> rollback;
Query OK, 0 rows affected (0.00 sec)
```

Assignment 5: Begin a transaction, perform a series of INSERTs into 'orders', setting a SAVEPOINT after each, rollback to the second SAVEPOINT, and COMMIT the overall transaction.

Start transaction;

Insert into orders (orderid, custid,order_date,order_total) values(5,05,’2024-04-09’,’1000.00);

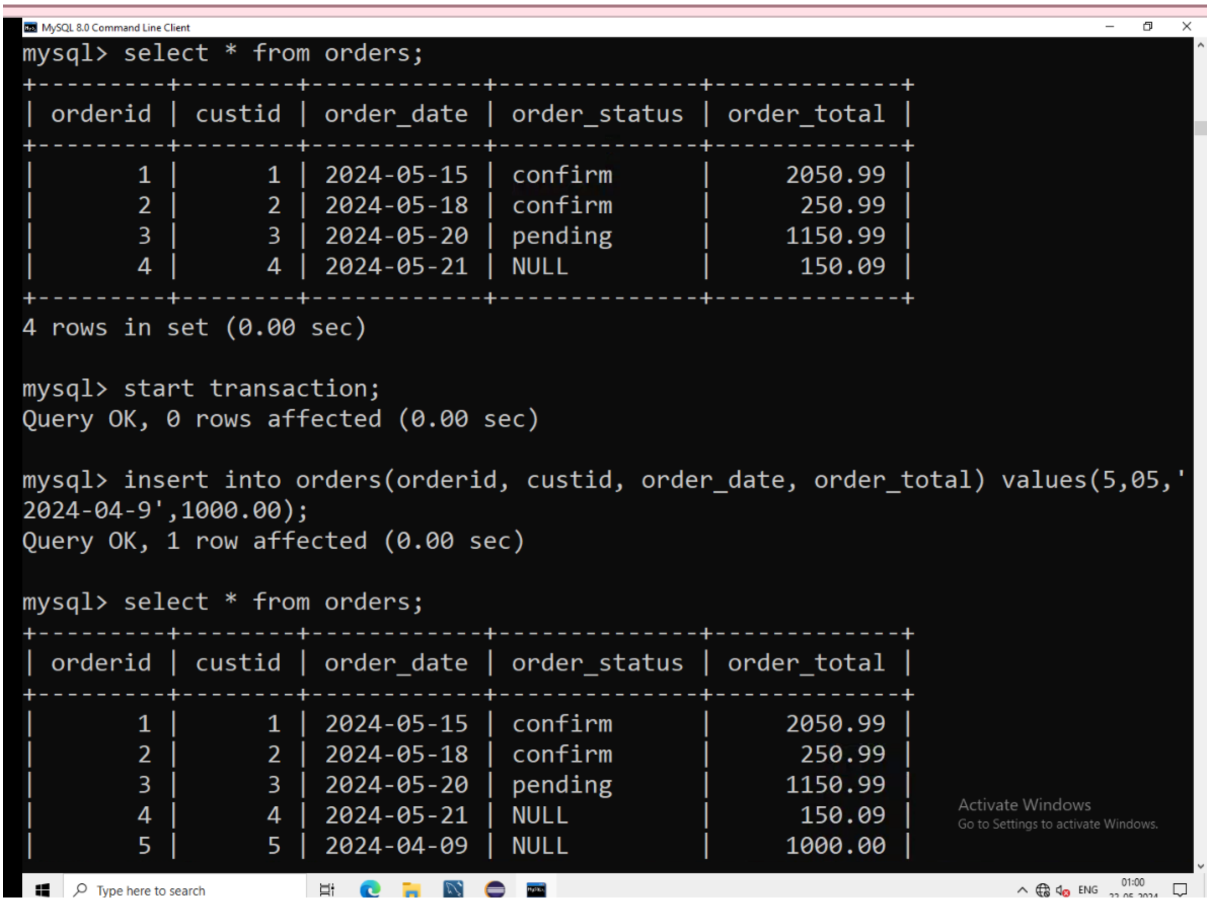
Savepoint savepoint_1;

Insert into orders (orderid, custid,order_date,order_total) values(6,06,’2024-04-18’,’1090.99);

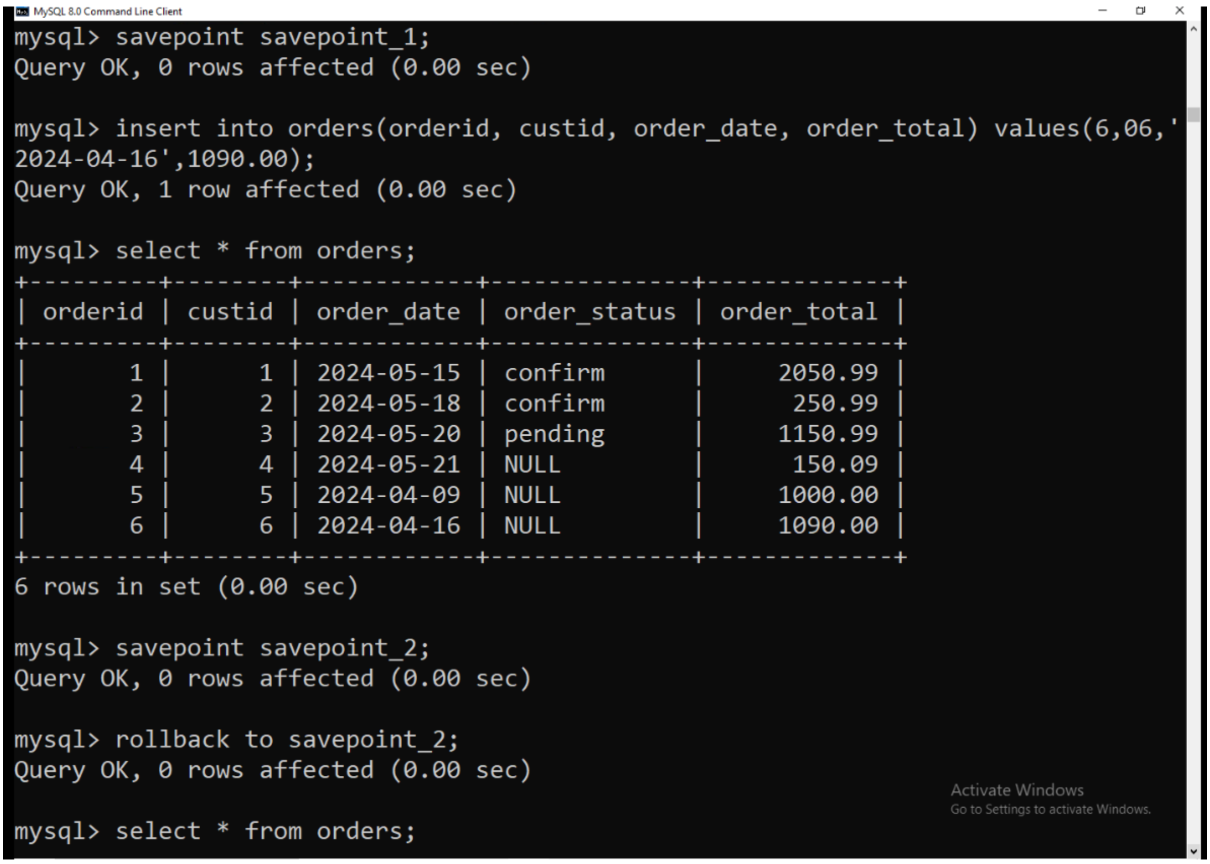
Savepoint savepoint_2;

Rollback savepoint_2 // Any changes made after savepoint_2 will be rolled back.

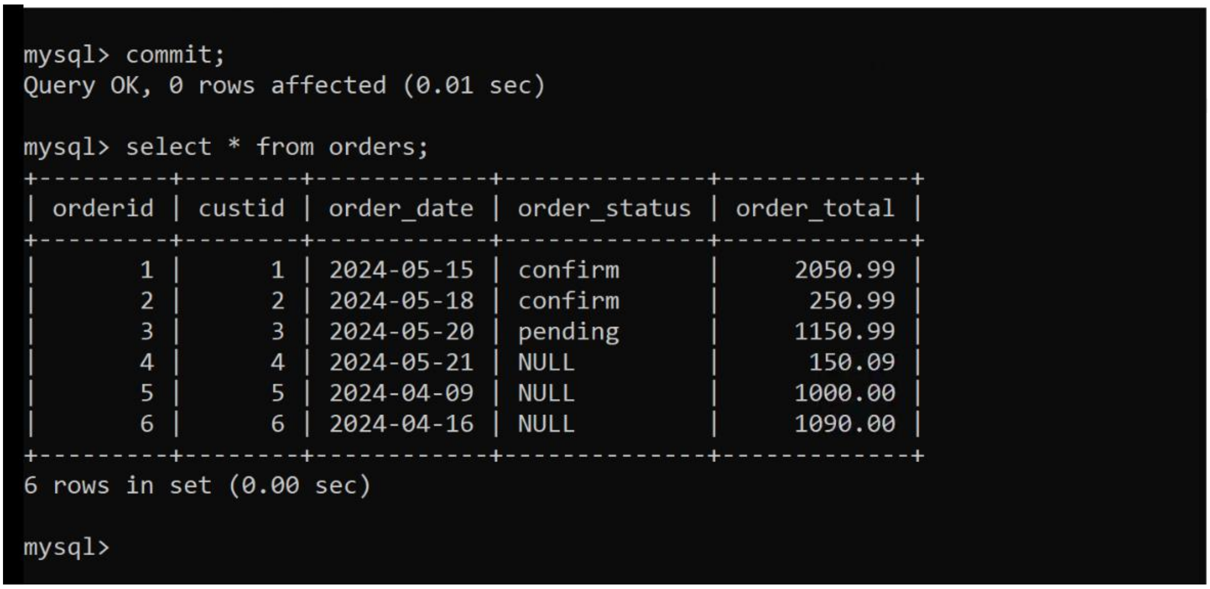
Commit;


MySQL 8.0 Command Line Client
Activate Windows
Go to Settings to activate Windows.
Type here to search
ENG
01:00

```
mysql> select * from orders;
+---------+--------+------------+--------------+-------------+
| orderid | custid | order_date | order_status | order_total |
+---------+--------+------------+--------------+-------------+
|       1 |      1 | 2024-05-15 | confirm      |     2050.99 |
|       2 |      2 | 2024-05-18 | confirm      |      250.99 |
|       3 |      3 | 2024-05-20 | pending      |     1150.99 |
|       4 |      4 | 2024-05-21 | NULL         |      150.09 |
+---------+--------+------------+--------------+-------------+
4 rows in set (0.00 sec)

mysql> start transaction;
Query OK, 0 rows affected (0.00 sec)

mysql> insert into orders(orderid, custid, order_date, order_total) values(5,05,'
2024-04-9',1000.00);
Query OK, 1 row affected (0.00 sec)

mysql> select * from orders;
+---------+--------+------------+--------------+-------------+
| orderid | custid | order_date | order_status | order_total |
+---------+--------+------------+--------------+-------------+
|       1 |      1 | 2024-05-15 | confirm      |     2050.99 |
|       2 |      2 | 2024-05-18 | confirm      |      250.99 |
|       3 |      3 | 2024-05-20 | pending      |     1150.99 |
|       4 |      4 | 2024-05-21 | NULL         |      150.09 |
|       5 |      5 | 2024-04-09 | NULL         |     1000.00 |
```


MySQL 8.0 Command Line Client
Activate Windows
Go to Settings to activate Windows.

```
mysql> savepoint savepoint_1;
Query OK, 0 rows affected (0.00 sec)

mysql> insert into orders(orderid, custid, order_date, order_total) values(6,06,'
2024-04-16',1090.00);
Query OK, 1 row affected (0.00 sec)

mysql> select * from orders;
+---------+--------+------------+--------------+-------------+
| orderid | custid | order_date | order_status | order_total |
+---------+--------+------------+--------------+-------------+
|       1 |      1 | 2024-05-15 | confirm      |     2050.99 |
|       2 |      2 | 2024-05-18 | confirm      |      250.99 |
|       3 |      3 | 2024-05-20 | pending      |     1150.99 |
|       4 |      4 | 2024-05-21 | NULL         |      150.09 |
|       5 |      5 | 2024-04-09 | NULL         |     1000.00 |
|       6 |      6 | 2024-04-16 | NULL         |     1090.00 |
+---------+--------+------------+--------------+-------------+
6 rows in set (0.00 sec)

mysql> savepoint savepoint_2;
Query OK, 0 rows affected (0.00 sec)

mysql> rollback to savepoint_2;
Query OK, 0 rows affected (0.00 sec)

mysql> select * from orders;
```



```
mysql> commit;
Query OK, 0 rows affected (0.01 sec)

mysql> select * from orders;
+---------+--------+------------+--------------+-------------+
| orderid | custid | order_date | order_status | order_total |
+---------+--------+------------+--------------+-------------+
|       1 |      1 | 2024-05-15 | confirm      |     2050.99 |
|       2 |      2 | 2024-05-18 | confirm      |      250.99 |
|       3 |      3 | 2024-05-20 | pending      |     1150.99 |
|       4 |      4 | 2024-05-21 | NULL         |      150.09 |
|       5 |      5 | 2024-04-09 | NULL         |     1000.00 |
|       6 |      6 | 2024-04-16 | NULL         |     1090.00 |
+---------+--------+------------+--------------+-------------+
6 rows in set (0.00 sec)

mysql>
```

Assignment 6: Draft a brief report on the use of transaction logs for data recovery and create a hypothetical scenario where a transaction log is instrumental in data recovery after an unexpected shutdown.

Transaction logs are crucial components of database management systems that record all changes made to a database. These logs serve as a reliable source of information for recovering data in the event of system failures or unexpected shutdowns.

Importance of Transaction Logs:

1. Data Integrity: Transaction logs ensure data integrity by recording every transaction before it is committed to the database. This allows for rollbacks or recovery to a specific point in time.

2. Recovery Point: They provide a recovery point in case of system failures, allowing databases to be restored to a consistent state prior to the failure.

3. Performance Monitoring: Transaction logs also aid in performance monitoring and troubleshooting, as they track changes and can identify potential issues.

Hypothetical Scenario:

Imagine a scenario where a large e-commerce company experiences an unexpected server shutdown during a peak shopping period, resulting in potential data loss and customer disruption. However, due to the implementation of transaction logs, the company's database administrator can initiate a successful data recovery process.

Scenario Details:

1. Unexpected Shutdown: The e-commerce platform experiences a sudden server shutdown due to a power outage.

2. Data Loss Concerns: Concerns arise about potential data loss, including ongoing transactions and customer orders that were being processed.

3. Transaction Logs Utilization: The database administrator leverages transaction logs to restore the database to its state just before the shutdown.

4. Recovery Process: By analysing the transaction logs, the administrator identifies the last committed transactions before the shutdown.

5. Database Restoration: Using this information, the administrator restores the database to the point just before the unexpected shutdown, ensuring minimal data loss and maintaining data consistency.

6. Customer Impact Mitigation: The quick recovery minimizes disruption for customers, allowing them to resume their transactions seamlessly.