



# **PROJECT REPORT**

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EE4350 Database Systems

By

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## **Abstraction**

In today's digital era, efficient management of data is crucial for the success of businesses across various industries. This report explores the application of Database Management Systems (DBMS) in the context of a bakery business, aiming to optimize operations, enhance customer experiences, and streamline internal processes.

The report begins by outlining the significance of DBMS in modern business environments, emphasizing its role in organizing, storing, and retrieving data efficiently. It discusses the unique challenges faced by bakery businesses, such as inventory management, sales tracking, and customer relationship management, and how DBMS solutions can address these challenges effectively.

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# **Chapter 1**

## **Requirement Analysis**

### **1.1 Functional Requirements**

In alignment with the designated mini project theme "DBMS Bakery Business" nine distinct entities have been identified for consideration. These entities encompass Customer, Transaction, Product, Delivery, Employee, Branches, Manager, Supplier\_Info and Take\_Away. Within the framework of the Bakery Management System database, these nine entities are interconnected through a spectrum of diverse relationships. Specifically, the Branches entity is intrinsically linked to the Employee entity, Manager entity, Product entity, Transaction entity and Supplier\_Info entity through relationships denoted as "works", "manage", "make", "manage by" and "assesses by" respectively, while the Customer and Transaction entities are correlated via "place" relationship. Additionally, the Customer and Take\_Away entities are associated through "taken by" relationship, whereas the Delivery and Take\_Away both entities are connected to Product entity via "can" relationships. Furthermore, Customer and Delivery entities are in a relationship called "deliver".

In the development of the conceptual model of Bakery Management System database, certain attributes have been deemed essential as primary keys. These include Customer\_ID, Order\_ID, Product\_ID, Delivery\_ID, Employee\_ID, Branches\_ID and Manager\_ID. These primary keys serve as pivotal identifiers within the database structure, facilitating efficient organization and retrieval of pertinent information. Through a meticulous process of analysis and design, the conceptual representation of the database is translated into a logical structure, laying the groundwork for its eventual physical implementation within the database management system using MySQL Workbench.

## **1.2 Data Requirements**

In the database project titled "DBMS Bakery Business" there are nine distinct data categories identified as essential. Specifically, one of these categories are classified as a weak data entity, while remaining eight entities fall under the category of strong data entities. Below are the defined entities and their respective attributes.

### **Strong entities and their attributes**

Customer

- Customer ID
- Name
- Phone number
- Home Number
- Street
- City

Transaction

- Order ID
- Order date
- Product ID
- Status
- Total amount
- Customer ID

Product

- Product ID
- Stock quantity
- Price of one item
- Name

Delivery

- Delivery ID
- Name
- Contact Info
- Product ID

Employee

- Employee ID
- Employee name
- Position
- Salary
- Branches ID

Branches

- Branches ID
- Location
- Contact info
- Manager ID
- Number of employees

Manager

- Manager ID
- Manager name

Take Away

- Order no
- Branch ID

**Weak entities and their attributes**

Supplier Info

- Supplier ID
- Name
- Ingredients
- Quantity
- Contact number

# Chapter 2

## Conceptual Design

### 2.1 ER Diagram

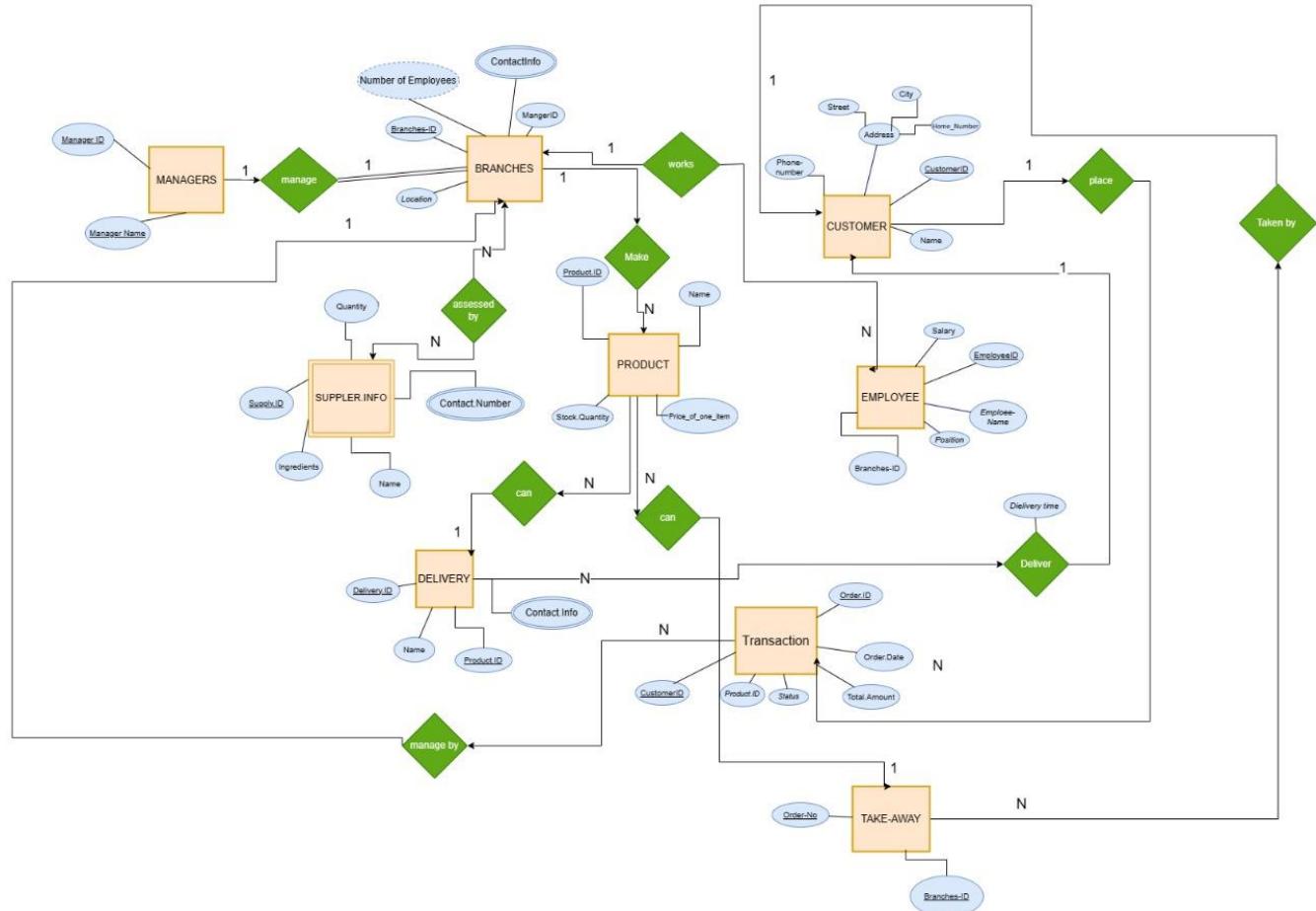
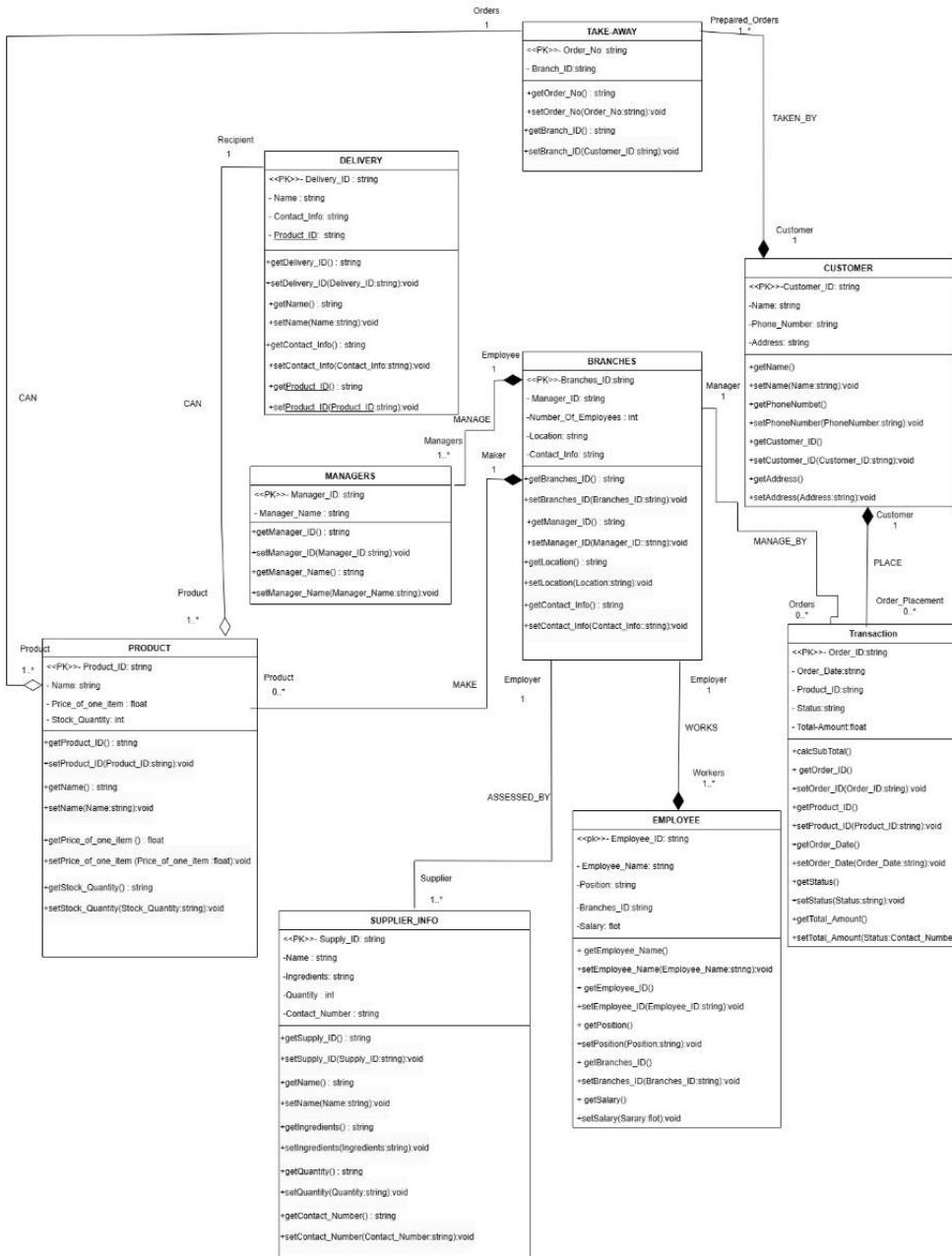


Figure 2.1: ER Diagram

## 2.2 UML Class Diagram



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Figure 2.2: UML Class Diagram

# Chapter 3

## Logical Design

### 3.1 Mapping ER Diagram to Relational Database Model

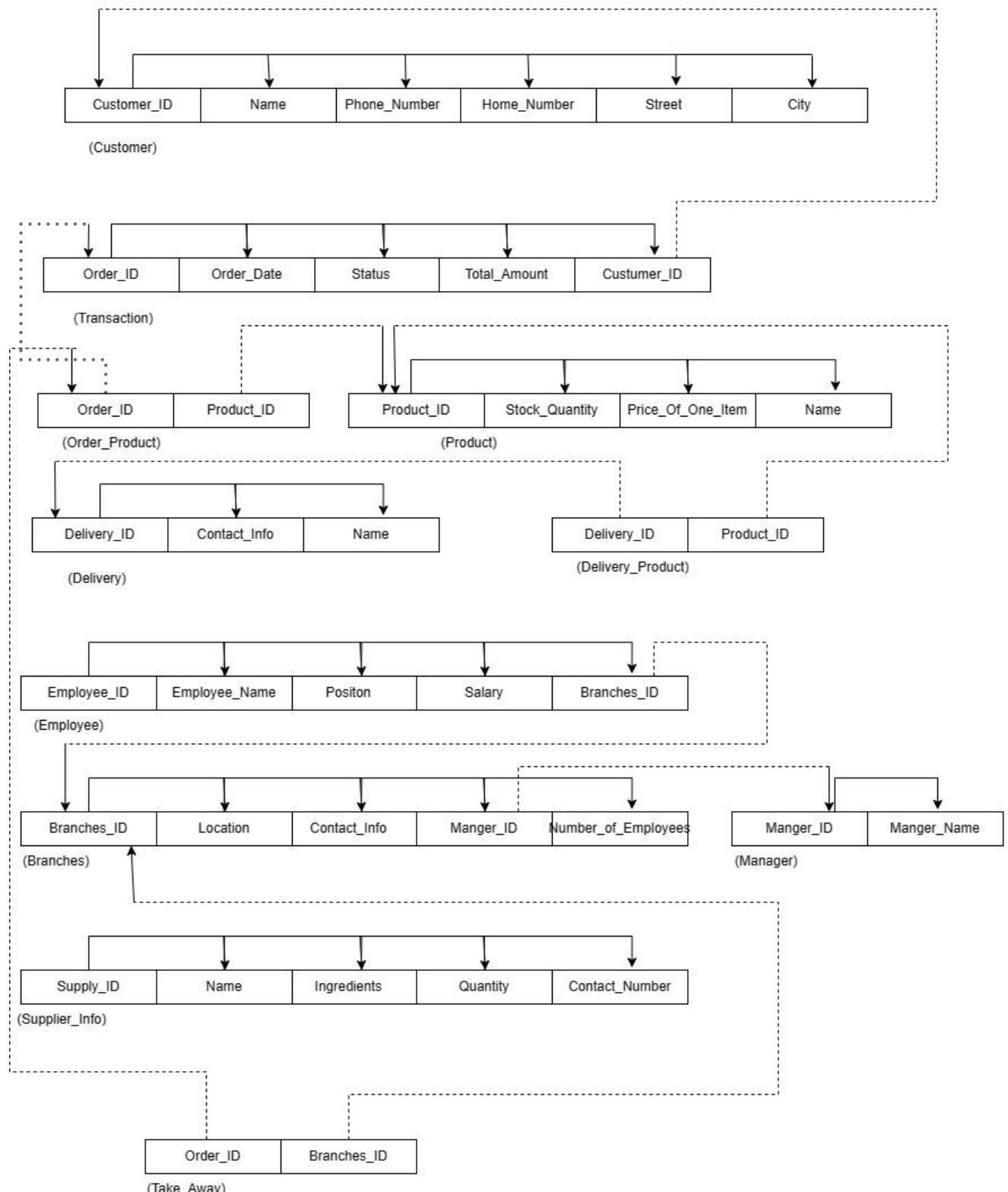


Figure 3.1: Logical Database Design in Second Normalized Form

### 3.2 Tables in Database Model

Table 3.2.1: CUSTOMER table in relational database model

<u>Customer ID</u>	Name	Phone Number	Home_Number	Street	City
A001	Namal	0702345678	No 12	Main road	Kandy
A002	Kamal	0765890234	No 9	School road	Katugasthota
A003	Arun	0712340987	No 4	temple road	Peradeniya
A004	Nimal	0702386794	No 5	ABC road	Peradeniya
A005	Amal	0701253689	No 234	Camus Road	Kandy
A006	Amal	0709285473	No 13	temple road	Katugasthota
A007	Bimal	0703498572	No 354	temple road	Kandy

Table 3.2.2: TRANSACTION table in relational database model

<u>Order_ID</u>	Order_Date	Status	Total_Amount	<u>Customer_ID</u>
W001	10/03/2024	Delivery	70	A001
W002	10/03/2024	Delivery	70	A002
W003	11/03/2024	Delivery	120	A002
W004	11/03/2024	Take away	100	A003
W005	11/03/2024	Delivery	70	A005
W006	12/03/2024	Take away	100	A004
W007	12/03/2024	Take away	60	A006

Table 3.2.1: ORDER\_PRODUCT table in relational database model

<u>Order_ID</u>	<u>Product_ID</u>
W001	P001
W001	P003
W001	P007
W002	P001
W003	P002
W004	P003
W005	P001
W006	P003
W007	P004

Table 3.2.4: PRODUCT table in relational database model

<u>Product_ID</u>	<u>Stock_Quantity</u>	<u>Price of one item</u>	Name
P001	80	70	Egg bun
P002	40	120	Chicken bun
P003	50	100	Fish bun
P004	50	60	Jam bun
P005	46	120	Cake
P006	73	65	bread
P007	80	50	Gato

Table 3.2.5: DELIVERY table in relational database model

<u>Delivery_ID</u>	Name	Contact_Info
D001	Namal	0702345678
D002	Kamal	0765890234
D003	Amal	0702386794
D004	sunil	0701253689
D005	Amith	0709285473
D006	Sunith	0703498572
D007	nisal	0734345262

Table 3.2.6: DELIVERY\_PRODUCT table in relational database model

<u>Delivery_ID</u>	<u>Product_ID</u>
D001	P001
D002	P007
D003	P001
D004	P001
D005	P002
D005	P003
D005	P004
D006	P004
D007	P001

Table 3.2.7: EMPLOYEE table in relational database model

<u>Employee_ID</u>	<u>Employee_Name</u>	<u>Position</u>	<u>Salary</u>	<u>Branches_ID</u>
E001	Susil	chef	80000	B001
E002	Anil	chef	60000	B001
E003	Malith	Delivery boy	30000	B001
E004	Jagath	worker	40000	B002
E005	Malathi	worker	40000	B001
E006	Gayani	Cashier	50000	B001
E007	Nalaka	chef	60000	B002

Table 3.2.8: BRANCHES table in relational database model

<u>Branches_ID</u>	<u>Location</u>	<u>Contact_Info</u>	<u>Manger_ID</u>	<u>Number_of_Employees</u>
B001	Hapugala	0765890234	M001	5
B002	Galle Junction	0702386794	M002	7
B003	Wakwella	0701253689	M003	3
B004	Batuwanthuda	0709285473	M004	2
B005	Wijerama	074552522	M005	5
B006	Kalegana	071324352	M006	3
B007	Hapugala	070553542	M007	4

Table 3.2.9: MANAGER table in relational database model

<u>Manager_ID</u>	<u>Manager_Name</u>
M001	Kamal
M002	Sunil
M003	Nisha
M004	Senith
M005	Dehemi
M006	Wasana
M007	Akalanka

Table 3.2.10: SUPPLIER\_INFO table in relational database model

<b>Supply_ID</b>	<b>Name</b>	<b>Ingredients</b>	<b>Quantity</b>	<b>Contact_Number</b>
S001	Senith	Sugar	40	0765664588
S002	Kamal	Flour	73	0723344246
S003	Sunil	Flour	63	0794352546
S002	Kamal	Egg	15	0724346545
S005	Pasan	Sugar	40	0736344524
S006	Pasidh	Egg	20	0714356442
S007	Sunethi	Sugar	40	0746778959

Table 3.2.2: TAKE\_AWAY table in relational database model

<b>Order_No</b>	<b>Branch_ID</b>
W001	B002
W003	B001
W005	B002
W006	B004
W007	B002
W008	B005
W009	B007

# Chapter 4

## Implementation

### 4.1 Creating the Database Schema and Tables

#### Creating

The screenshot shows the MySQL Workbench interface with the 'employee' schema selected in the Navigator pane. The SQL Editor pane displays the following SQL code for creating the 'Bakery\_SYSTEM' database and its tables:

```
1 * Create DATABASE Bakery_SYSTEM
2
3 * USE Bakery_SYSTEM
4
5 * CREATE TABLE Customer(
6     Customer_ID VARCHAR(25) NOT NULL,
7     Name varchar(50),
8     Phone_Number varchar(25),
9     Home_Number varchar(10),
10    Street varchar(25),
11    City varchar(25),
12    primary key(Customer_ID)
13 );
14
15 * CREATE TABLE Transaction(
16     Order_ID VARCHAR(25) NOT NULL,
17     Order_Date DATE,
18     Status varchar(25),
19     Total_Amount INT,
20     Customer_ID varchar(25),
21     primary key(Order_ID)
22 );
23
24 * CREATE TABLE Order_Product(
25     Order_ID VARCHAR(25) NOT NULL,
26     Product_ID varchar(25) NOT NULL
27 );
28
29 * CREATE TABLE PRODUCT(
30     Product_ID VARCHAR(25) NOT NULL,
```

The Output pane shows the results of the execution, indicating 0 rows affected for each statement. The status bar at the bottom right shows the date and time as 4/6/2024 9:55 AM.

The screenshot shows the MySQL Workbench interface with the 'employee' schema selected in the Navigator pane. The SQL Editor pane displays the continuation of the SQL code for creating the 'Bakery\_SYSTEM' database and its tables:

```
31     Stock_Quantity INT,
32     Name varchar(50),
33     Price_of_One_Item INT,
34     primary key(Product_ID)
35 );
36
37 * CREATE TABLE DELIVERY(
38     Delivery_ID VARCHAR(25) NOT NULL,
39     Name varchar(50),
40     Contact_Info varchar(50),
41     primary key(Delivery_ID)
42 );
43
44 * CREATE TABLE DELIVERY_PRODUCT(
45     Delivery_ID VARCHAR(25) NOT NULL,
46     Product_ID varchar(25) NOT NULL
47 );
48
49 * CREATE TABLE Employee(
50     Employee_ID VARCHAR(25) NOT NULL,
51     Employee_Name varchar(50),
52     Position varchar(25),
53     Salary INT,
54     Branches_ID varchar(25),
55     primary key(Employee_ID)
56 );
57
```

The Output pane shows the results of the execution, indicating 0 rows affected for each statement. The status bar at the bottom right shows the date and time as 4/6/2024 9:55 AM.

MySQL Workbench Local instance MySQL80

```

CREATE TABLE BRANCHES(
    Branches_ID VARCHAR(25) NOT NULL,
    Location varchar(25),
    Contact_Info varchar(25),
    Number_of_Employees INT,
    Manager_ID varchar(25),
    primary key(Branches_ID)
);

CREATE TABLE MANAGER(
    Manager_ID VARCHAR(25) NOT NULL,
    Manager_Name varchar(25) NOT NULL,
    primary key(Manager_ID)
);

CREATE TABLE SUPPLIER_INFO(
    Supply_ID VARCHAR(25) NOT NULL,
    Name varchar(25),
    Ingredients varchar(25),
    Quantity INT,
    Contact_Number varchar(25),
    primary key(Supply_ID)
);

CREATE TABLE TAKE_AWAY(
    Order_No VARCHAR(25) NOT NULL,
    Branch_ID varchar(25) NOT NULL,
    );

```

No object selected

Object Info Session Query Completed

Action Output

#	Time	Action	Message	Duration / Path
16	09:34:51	ALTER TABLE Order_Product ADD CONSTRAINT FK_Po1 FOREIGN KEY (Product_ID) REFERENCES PRODUCT(Product_ID)	0 rows affected Records: 0 Duplicates: 0 Warnings: 0	0.047 sec
17	09:34:54	ALTER TABLE DELIVERY_PRODUCT ADD CONSTRAINT FK_Del FOREIGN KEY (Product_ID) REFERENCES PRODUCT(Product_ID)	0 rows affected Records: 0 Duplicates: 0 Warnings: 0	0.047 sec
18	09:34:58	ALTER TABLE DELIVERY_PRODUCT ADD CONSTRAINT FK_Del FOREIGN KEY (Delivery_ID) REFERENCES DELIVERY(Delivery_ID)	0 rows affected Records: 0 Duplicates: 0 Warnings: 0	0.047 sec
19	09:35:01	ALTER TABLE Employee ADD CONSTRAINT FK_Br FOREIGN KEY (Branches_ID) REFERENCES BRANCHES(Branches_ID)	0 rows affected Records: 0 Duplicates: 0 Warnings: 0	0.046 sec
20	09:35:04	ALTER TABLE BRANCHES ADD CONSTRAINT FK_Man FOREIGN KEY (Manager_ID) REFERENCES MANAGER(Manager_ID)	0 rows affected Records: 0 Duplicates: 0 Warnings: 0	0.047 sec
21	09:35:07	ALTER TABLE TAKE_AWAY ADD CONSTRAINT FK_Tak FOREIGN KEY (Branch_ID) REFERENCES BRANCHES(Branches_ID)	0 rows affected Records: 0 Duplicates: 0 Warnings: 0	0.047 sec

MySQL Workbench Local instance MySQL80

```

ALTER TABLE Transaction
ADD CONSTRAINT FK_Cus
FOREIGN KEY (Customer_ID) REFERENCES Customer(Customer_ID);

ALTER TABLE Order_Product
ADD CONSTRAINT FK_Ord
FOREIGN KEY (Order_ID) REFERENCES Transaction(Order_ID);

ALTER TABLE Order_Product
ADD CONSTRAINT FK_Prod
FOREIGN KEY (Product_ID) REFERENCES PRODUCT(Product_ID);

ALTER TABLE DELIVERY_PRODUCT
ADD CONSTRAINT FK_Pro2
FOREIGN KEY (Product_ID) REFERENCES PRODUCT(Product_ID);

ALTER TABLE DELIVERY_PRODUCT
ADD CONSTRAINT FK_Del
FOREIGN KEY (Delivery_ID) REFERENCES DELIVERY(Delivery_ID);

ALTER TABLE Employee
ADD CONSTRAINT FK_Bra
FOREIGN KEY (Branches_ID) REFERENCES BRANCHES(Branches_ID);

ALTER TABLE BRANCHES
ADD CONSTRAINT FK_Man
FOREIGN KEY (Manager_ID) REFERENCES MANAGER(Manager_ID);

```

No object selected

Object Info Session Query Completed

Action Output

#	Time	Action	Message	Duration / Path
16	09:34:51	ALTER TABLE Order_Product ADD CONSTRAINT FK_Po1 FOREIGN KEY (Product_ID) REFERENCES PRODUCT(Product_ID)	0 rows affected Records: 0 Duplicates: 0 Warnings: 0	0.047 sec
17	09:34:54	ALTER TABLE DELIVERY_PRODUCT ADD CONSTRAINT FK_Pro2 FOREIGN KEY (Product_ID) REFERENCES PRODUCT(Product_ID)	0 rows affected Records: 0 Duplicates: 0 Warnings: 0	0.047 sec
18	09:34:58	ALTER TABLE DELIVERY_PRODUCT ADD CONSTRAINT FK_Del FOREIGN KEY (Delivery_ID) REFERENCES DELIVERY(Delivery_ID)	0 rows affected Records: 0 Duplicates: 0 Warnings: 0	0.047 sec
19	09:35:01	ALTER TABLE Employee ADD CONSTRAINT FK_Br FOREIGN KEY (Branches_ID) REFERENCES BRANCHES(Branches_ID)	0 rows affected Records: 0 Duplicates: 0 Warnings: 0	0.046 sec
20	09:35:04	ALTER TABLE BRANCHES ADD CONSTRAINT FK_Man FOREIGN KEY (Manager_ID) REFERENCES MANAGER(Manager_ID)	0 rows affected Records: 0 Duplicates: 0 Warnings: 0	0.047 sec
21	09:35:07	ALTER TABLE TAKE_AWAY ADD CONSTRAINT FK_Tak FOREIGN KEY (Branch_ID) REFERENCES BRANCHES(Branches_ID)	0 rows affected Records: 0 Duplicates: 0 Warnings: 0	0.047 sec

MySQL Workbench Local instance MySQL80

```

File Edit View Query Database Server Tools Scripting Help
Navigator: employee SQL File 3* SQL File 4* SQL File 5* SQL File 6*
schemas
Schemas
Filter objects
dbsproject
fcs
fce_22
Tables
views
Stored Procedures
Functions
hospital_ms
mydatabase
mydb
practisel
skills
a02
sys
workshop5
world

ALTER TABLE Order_Product
ADD CONSTRAINT FK_Ord
FOREIGN KEY (Order_ID) REFERENCES Transaction(Order_ID);
ALTER TABLE Order_Product
ADD CONSTRAINT FK_Prod
FOREIGN KEY (Product_ID) REFERENCES PRODUCT(Product_ID);
ALTER TABLE DELIVERY_PRODUCT
ADD CONSTRAINT FK_Prod2
FOREIGN KEY (Product_ID) REFERENCES PRODUCT(Product_ID);
ALTER TABLE DELIVERY_PRODUCT
ADD CONSTRAINT FK_Del
FOREIGN KEY (Delivery_ID) REFERENCES DELIVERY(Delivery_ID);
ALTER TABLE Employee
ADD CONSTRAINT FK_Br
FOREIGN KEY (Branches_ID) REFERENCES BRANCHES(Branches_ID);
ALTER TABLE BRANCHES
ADD CONSTRAINT FK_Man
FOREIGN KEY (Manager_ID) REFERENCES MANAGER(Manager_ID);
ALTER TABLE TAKE_AWAY
ADD CONSTRAINT FK_Task
FOREIGN KEY (Branch_ID) REFERENCES BRANCHES(Branches_ID);

Action Output
# Time Action
16 (09:34:51) ALTER TABLE Order_Product ADD CONSTRAINT FK_Prod FOREIGN KEY (Product_ID) REFERENCES PRODUCT(Product_ID) 0 rows affected Records: 0 Duplicates: 0 Warnings: 0 0.047 sec
17 (09:34:54) ALTER TABLE DELIVERY_PRODUCT ADD CONSTRAINT FK_Prod2 FOREIGN KEY (Product_ID) REFERENCES PRODUCT(Product_ID) 0 rows affected Records: 0 Duplicates: 0 Warnings: 0 0.047 sec
18 (09:34:58) ALTER TABLE DELIVERY_PRODUCT ADD CONSTRAINT FK_Del FOREIGN KEY (Delivery_ID) REFERENCES DELIVERY(Delivery_ID) 0 rows affected Records: 0 Duplicates: 0 Warnings: 0 0.047 sec
19 (09:35:01) ALTER TABLE Employee ADD CONSTRAINT FK_Br FOREIGN KEY (Branches_ID) REFERENCES BRANCHES(Branches_ID) 0 rows affected Records: 0 Duplicates: 0 Warnings: 0 0.046 sec
20 (09:35:04) ALTER TABLE BRANCHES ADD CONSTRAINT FK_Man FOREIGN KEY (Manager_ID) REFERENCES MANAGER(Manager_ID) 0 rows affected Records: 0 Duplicates: 0 Warnings: 0 0.047 sec
21 (09:35:07) ALTER TABLE TAKE_AWAY ADD CONSTRAINT FK_Task FOREIGN KEY (Branch_ID) REFERENCES BRANCHES(Branches_ID) 0 rows affected Records: 0 Duplicates: 0 Warnings: 0 0.047 sec

```

No object selected

Object Info Session Query Completed

## Inserting

MySQL Workbench Local instance MySQL80

```

File Edit View Query Database Server Tools Scripting Help
Navigator: employee SQL File 3* SQL File 4* SQL File 5* SQL File 6*
schemas
Schemas
Filter objects
dbsproject
fce_22
Tables
views
Stored Procedures
Functions
hospital_ms
mydatabase
mydb
practisel
skills
a02
sys
workshop5
world

INSERT INTO Customer values
('A001', 'Navel', '0702345678', 'No 12', 'Main road', 'Kandy'),
('A001', 'Karel', '0755901234', 'No 9', 'School road', 'Kalgudethota'),
('A003', 'Anun', '0712345678', 'No 4', 'Temple road', 'Peradeniya'),
('A004', 'Nimal', '0702345678', 'No 5', 'ABC road', 'Peradeniya'),
('A005', 'Amila', '0781233698', 'No 13', 'Census Road', 'Kandy'),
('A006', 'Amila', '0789823543', 'No 13', 'Temple road', 'Kalgudethota'),
('A007', 'Binal', '0703498572', 'No 354', 'Temple road', 'Kandy');

INSERT INTO Transaction(Order_ID, Order_Date, Status, Total_Amount, Customer_ID)values
('W001', '2024-10-03', 'Delivery', '70', 'A002'),
('W002', '2024-10-03', 'Delivery', '70', 'A002'),
('W003', '2024-10-03', 'Delivery', '126', 'A002'),
('W004', '2024-10-04', 'Take away', '100', 'A003'),
('W005', '2024-10-05', 'Delivery', '70', 'A005'),
('W006', '2024-10-06', 'Take away', '100', 'A004'),
('W007', '2024-10-07', 'Take away', '60', 'A005');

INSERT INTO Product (Product_ID, Stock_Quantity, Price_of_one_item, Name)
VALUES
('P001', 80, 70, 'Egg bun'),
('P002', 40, 100, 'Chicken bun'),
('P003', 50, 100, 'Fish bun'),
('P004', 30, 60, 'Tee bun'),
('P005', 40, 100, 'Cake'),
('P006', 70, 65, 'Bread'),
('P007', 60, 50, 'Dessert');

Action Output
# Time Action
30 (10:22:50) INSERT INTO BRANCHES(Branches_ID, Location, Contact_Info, Manager_ID, Number_of_Employees) VALUES ('B001', 'HAPUGALA', 078589023, 1) 1 rows affected Records: 1 Duplicates: 0 Warnings: 0 Error Code: 1452 Cannot add or update a child row: a foreign key constraint fails ('bakery_system'.branches): CONSTRAINT 'FK_Man' FOREIGN KEY ... 0.000 sec
31 (10:23:07) INSERT INTO MANAGER(Manager_ID, Manager_Name) VALUES ('M001', 'Kamal'), ('M002', 'Survi'), ('M003', 'Nalin'), ('M004', 'Seethi') 4 rows affected Records: 4 Duplicates: 0 Warnings: 0 0.000 sec
32 (10:23:19) INSERT INTO BRANCHES(Branches_ID, Location, Contact_Info, Manager_ID, Number_of_Employees) VALUES ('B001', 'HAPUGALA', 078589023, 1) 1 rows affected Records: 1 Duplicates: 0 Warnings: 0 0.000 sec
33 (10:23:30) INSERT INTO Employee(Employee_ID, Employee_Name, Position, Salary, Branches_ID) VALUES ('E001', 'Survi', '00000 80000 8001), ('E002', 'A... 2 rows affected Records: 2 Duplicates: 0 Warnings: 0 0.016 sec
34 (10:24:46) INSERT INTO SUPPLIER_INFO(Supplier_ID, Name, Ingredients, Quantity, Contact_Number) VALUES ('S001', 'Senthil', 'sugar, 40, 0765664588), ('S002', 'L... 2 rows affected Records: 2 Duplicates: 0 Warnings: 0 0.000 sec
35 (10:24:01) INSERT INTO TAKE_AWAY(Order_No, Branch_ID) VALUES ('W001', 'B002'), ('W003', 'B001'), ('W005', 'B002'), ('W006', 'B004'), ('W007', 'B003') 5 rows affected Records: 5 Duplicates: 0 Warnings: 0 0.000 sec

```

No object selected

Object Info Session Query Completed

MySQL Workbench Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

Navigator employee SQL File 3\* SQL File 4\* SQL File 5\* SQL File 6\* Lmt to 1000 rows

```

153 * INSERT INTO Order_Product(Order_ID, Product_ID)
154   VALUES
155     ('W001', 'P001'),
156     ('W001', 'P002'),
157     ('W001', 'P003'),
158     ('W002', 'P001'),
159     ('W003', 'P002'),
160     ('W004', 'P003'),
161     ('W005', 'P001'),
162     ('W006', 'P002'),
163     ('W007', 'P004');
164
165 * INSERT INTO Delivery (Delivery_ID, Name, Contact_Info)
166   VALUES
167     ('D001', 'Kamel', '0702345678'),
168     ('D002', 'Kamel', '0705509034'),
169     ('D003', 'Aneel', '0702265791'),
170     ('D004', 'Sunil', '0702253689'),
171     ('D005', 'Anil', '0709056737'),
172     ('D006', 'Sunil', '0702498572'),
173     ('D007', 'Nisar', '0704345202');
174
175
176
177
178
179
180
181
182

```

Administration Schemas Information

No object selected

Action Output

#	Time	Action	Message	Duration / Path
30	10:22:50	INSERT INTO BRANCHES(Branches_ID, Location, Contact_Info, Manager_ID, Number_of_Employees) VALUES ('B001', 'HAFIGALA', 076589023, 'M001', 'Kamel')	Error Code: 1452 Cannot add or update a child row: a foreign key constraint fails ( <i>bakery_system</i> .`branches`); CONSTRAINT `FK_Man` FOREIGN KEY ...	0.000 sec
31	10:23:07	INSERT INTO MANAGER(Manager_ID, Manager_Name) VALUES ('M001', 'Kamel'), ('M002', 'Sunil'), ('M003', 'Nisar'), ('M004', 'Sevin')	7 rows(s) affected Records: 7 Duplicates: 0 Warnings: 0	0.000 sec
32	10:23:19	INSERT INTO BRANCHES(Branches_ID, Location, Contact_Info, Manager_ID, Number_of_Employees) VALUES ('B001', 'HAFIGALA', 076589023, 'M001', 'Kamel')	7 rows(s) affected Records: 7 Duplicates: 0 Warnings: 0	0.000 sec
33	10:23:30	INSERT INTO Employee(Employee_ID, Employee_Name, Position, Salary, Branches_ID) VALUES ('E001', 'Sunil', '0700000001', 'B002', 'A_'), ('E002', 'A_')	7 rows(s) affected Records: 7 Duplicates: 0 Warnings: 0	0.016 sec
34	10:23:46	INSERT INTO SUPPLIER_INFO(Supply_ID, Name, Ingredients, Quantity, Contact_Number) VALUES ('S001', 'SENTI', 'sugar', 40, 0765654589)	7 rows(s) affected Records: 7 Duplicates: 0 Warnings: 0	0.000 sec
35	10:24:01	INSERT INTO Take_Away(Order_No, Branch_ID) VALUES ('W001', 'B002'), ('W003', 'B001'), ('W005', 'B002'), ('W006', 'B004'), ('W007', '...')	7 rows(s) affected Records: 7 Duplicates: 0 Warnings: 0	0.000 sec

Object Info Session Query Completed

MySQL Workbench Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

Navigator employee SQL File 3\* SQL File 4\* SQL File 5\* SQL File 6\* Lmt to 1000 rows

```

188 * INSERT INTO Delivery_Product (Delivery_ID, Product_ID)
189   VALUES
190     ('D001', 'P001'),
191     ('D002', 'P003'),
192     ('D003', 'P004'),
193     ('D004', 'P002'),
194     ('D005', 'P001'),
195     ('D006', 'P003'),
196     ('D007', 'P004'),
197     ('D008', 'P001');
198
199 * INSERT INTO MANAGER (Manager_ID, Manager_Name)
200   VALUES
201     ('M001', 'Kamel'),
202     ('M002', 'Sunil'),
203     ('M003', 'Nisar'),
204     ('M004', 'Sevin'),
205     ('M005', 'Detest'),
206     ('M006', 'Xaser'),
207     ('M007', 'Akalanke');
208
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```

Administration Schemas Information

No object selected

Action Output

#	Time	Action	Message	Duration / Path
30	10:22:50	INSERT INTO BRANCHES(Branches_ID, Location, Contact_Info, Manager_ID, Number_of_Employees) VALUES ('B001', 'HAFIGALA', 076589023, 'M001', 'Kamel')	Error Code: 1452 Cannot add or update a child row: a foreign key constraint fails ( <i>bakery_system</i> .`branches`); CONSTRAINT `FK_Man` FOREIGN KEY ...	0.000 sec
31	10:23:07	INSERT INTO MANAGER(Manager_ID, Manager_Name) VALUES ('M001', 'Kamel'), ('M002', 'Sunil'), ('M003', 'Nisar'), ('M004', 'Sevin')	7 rows(s) affected Records: 7 Duplicates: 0 Warnings: 0	0.000 sec
32	10:23:19	INSERT INTO BRANCHES(Branches_ID, Location, Contact_Info, Manager_ID, Number_of_Employees) VALUES ('B001', 'HAFIGALA', 076589023, 'M001', 'Kamel')	7 rows(s) affected Records: 7 Duplicates: 0 Warnings: 0	0.000 sec
33	10:23:30	INSERT INTO Employee(Employee_ID, Employee_Name, Position, Salary, Branches_ID) VALUES ('E001', 'Sunil', '0700000001', 'B002', 'A_'), ('E002', 'A_')	7 rows(s) affected Records: 7 Duplicates: 0 Warnings: 0	0.016 sec
34	10:23:46	INSERT INTO SUPPLIER_INFO(Supply_ID, Name, Ingredients, Quantity, Contact_Number) VALUES ('S001', 'SENTI', 'sugar', 40, 0765654589)	7 rows(s) affected Records: 7 Duplicates: 0 Warnings: 0	0.000 sec
35	10:24:01	INSERT INTO Take_Away(Order_No, Branch_ID) VALUES ('W001', 'B002'), ('W003', 'B001'), ('W005', 'B002'), ('W006', 'B004'), ('W007', '...')	7 rows(s) affected Records: 7 Duplicates: 0 Warnings: 0	0.000 sec

Object Info Session Query Completed

```
MySQL Workbench Local instance MySQL80 X
File Edit View Query Database Server Tools Scripting Help
SQL File 3* SQL File 4* SQL File 5* SQL File 6*
Navigator employee SQL File 3* SQL File 4* SQL File 5* SQL File 6* Lmt to 1000 rows
Schemas
Filter objects
dbsproject
foc
foc_23
Tables
Views
Stored Procedures
Functions
Hospital_ms
mydatabase
practise
pratice
sefile
sefile2
sys
workshop5
world

employee
VALUES
211 • INSERT INTO BRANCHES (Branches_ID, Location, Contact_Info, Manager_ID, Number_of_Employees)
VALUES
212
213 ('B001', 'HAPUGALA', '0765590234', 'M001', 5),
214 ('B002', 'GULLE JUNCTION', '0702386794', 'M002', 7),
215 ('B003', 'NAGELLA', '0701253608', 'M003', 3),
216 ('B004', 'BALAMANTIKA', '0700285472', 'M004', 2),
217 ('B005', 'NITTEKAVI', '07455252', 'M005', 5),
218 ('B006', 'KALEGANI', '07130432', 'M006', 3),
219 ('B007', 'HAPUGALA', '076553542', 'M007', 4);
220
221 • INSERT INTO Employee (Employee_ID, Employee_Name, Position, Salary, Branches_ID)
VALUES
222
223 ('E001', 'Sushil', 'chef', 80000, 'B001'),
224 ('E002', 'Anil', 'chef', 80000, 'B001'),
225 ('E003', 'Malith', 'Delivery boy', 30000, 'B001'),
226 ('E004', 'Jagath', 'worker', 40000, 'B002'),
227 ('E005', 'Malathi', 'worker', 40000, 'B001'),
228 ('E006', 'Gayatri', 'Cashier', 50000, 'B003'),
229 ('E007', 'Halaka', 'chef', 80000, 'B002');
230
231 • INSERT INTO SUPPLIER_INFO (Supply_ID, Name, Ingredients, Quantity, Contact_Number)
VALUES
232
233 ('S001', 'SENITH', 'sugar', 40, '0705664580'),
234 ('S002', 'Kamal', 'Flour', 75, '0723346240'),
235 ('S003', 'Sunil', 'flour', 65, '0793535240'),
236 ('S004', 'KOSALA', 'eggs', 15, '072434645'),
237 ('S005', 'PASAN', 'sugar', 40, '0736346524'),
238 ('S006', 'PASINDA', 'eggs', 20, '0742356424'),
239 ('S007', 'SENITH', 'sugar', 40, '0746778959');
240
241 • INSERT INTO Take_Away (Order_No, Branch_ID)
VALUES
242
243 ('W001', 'B002'),
244 ('W002', 'B002'),
245 ('W003', 'B002'),
246 ('W004', 'B004'),
247 ('W005', 'B002'),
248 ('W006', 'B005'),
249 ('W009', 'B007');

Output
Action Output
# Time Action Message Duration / Path
30 10:22:50 INSERT INTO BRANCHES (Branches_ID, Location, Contact_Info, Manager_ID, Number_of_Employees) VALUES ('B001', 'HAPUGALA', '0765590234', 'M001', 5) Error Code: 1452 Cannot add or update a child row: a foreign key constraint fails (bakery_system'.branches', CONSTRAINT 'FK_Man' FOREIGN KEY ...
31 10:23:07 INSERT INTO MANAGER (Manager_ID, Manager_Name) VALUES ('M001', 'Kamal'), ('M002', 'Survi'), ('M003', 'Naini'), ('M004', 'Senith'), ('M005', 'Halaka') 7 rows(s) affected Records: 7 Duplicates: 0 Warnings: 0 0.00 sec
32 10:23:15 INSERT INTO BRANCHES (Branches_ID, Location, Contact_Info, Manager_ID, Number_of_Employees) VALUES ('B001', 'HAPUGALA', '0765590234', 'M001', 5) 7 rows(s) affected Records: 7 Duplicates: 0 Warnings: 0 0.00 sec
33 10:23:30 INSERT INTO Employee (Employee_ID, Employee_Name, Position, Salary, Branches_ID) VALUES ('E001', 'Sushil', 80000, 'B001'), ('E002', 'Anil', 80000, 'B001') 7 rows(s) affected Records: 7 Duplicates: 0 Warnings: 0 0.016 sec
34 10:23:46 INSERT INTO SUPPLIER_INFO (Supply_ID, Name, Ingredients, Quantity, Contact_Number) VALUES ('S001', 'SENITH', 'sugar', 40, '0705664580') 7 rows(s) affected Records: 7 Duplicates: 0 Warnings: 0 0.00 sec
35 10:24:01 INSERT INTO Take_Away (Order_No, Branch_ID) VALUES ('W001', 'B002'), ('W003', 'B001'), ('W005', 'B002'), ('W006', 'B004'), ('W007', 'B002') 7 rows(s) affected Records: 7 Duplicates: 0 Warnings: 0 0.00 sec
Object Info Session
Query Completed
```

```
MySQL Workbench Local instance MySQL80 X
File Edit View Query Database Server Tools Scripting Help
SQL File 3* SQL File 4* SQL File 5* SQL File 6*
Navigator employee SQL File 3* SQL File 4* SQL File 5* SQL File 6* Lmt to 1000 rows
Schemas
Filter objects
dbsproject
foc
foc_23
Tables
Views
Stored Procedures
Functions
Hospital_ms
mydatabase
practise
pratice
sefile
sefile2
sys
workshop5
world

employee
VALUES
211 • INSERT INTO Employee (Employee_ID, Employee_Name, Position, Salary, Branches_ID)
VALUES
212
213 ('E001', 'Sushil', 'chef', 80000, 'B001'),
214 ('E002', 'Anil', 'chef', 80000, 'B001'),
215 ('E003', 'Malith', 'Delivery boy', 30000, 'B001'),
216 ('E004', 'Jagath', 'worker', 40000, 'B002'),
217 ('E005', 'Malathi', 'worker', 40000, 'B001'),
218 ('E006', 'Gayatri', 'Cashier', 50000, 'B003'),
219 ('E007', 'Halaka', 'chef', 80000, 'B002');
220
221 • INSERT INTO SUPPLIER_INFO (Supply_ID, Name, Ingredients, Quantity, Contact_Number)
VALUES
222
223 ('S001', 'SENITH', 'sugar', 40, '0705664580'),
224 ('S002', 'Kamal', 'Flour', 75, '0723346240'),
225 ('S003', 'Sunil', 'flour', 65, '0793535240'),
226 ('S004', 'KOSALA', 'eggs', 15, '072434645'),
227 ('S005', 'PASAN', 'sugar', 40, '0736346524'),
228 ('S006', 'PASINDA', 'eggs', 20, '0742356424'),
229 ('S007', 'SENITH', 'sugar', 40, '0746778959');
230
231 • INSERT INTO Take_Away (Order_No, Branch_ID)
VALUES
232
233 ('W001', 'B002'),
234 ('W002', 'B002'),
235 ('W003', 'B002'),
236 ('W004', 'B004'),
237 ('W005', 'B002'),
238 ('W006', 'B005'),
239 ('W009', 'B007');

Output
Action Output
# Time Action Message Duration / Path
30 10:22:50 INSERT INTO BRANCHES (Branches_ID, Location, Contact_Info, Manager_ID, Number_of_Employees) VALUES ('B001', 'HAPUGALA', '0765590234', 'M001', 5) Error Code: 1452 Cannot add or update a child row: a foreign key constraint fails (bakery_system'.branches', CONSTRAINT 'FK_Man' FOREIGN KEY ...
31 10:23:07 INSERT INTO MANAGER (Manager_ID, Manager_Name) VALUES ('M001', 'Kamal'), ('M002', 'Survi'), ('M003', 'Naini'), ('M004', 'Senith'), ('M005', 'Halaka') 7 rows(s) affected Records: 7 Duplicates: 0 Warnings: 0 0.00 sec
32 10:23:15 INSERT INTO BRANCHES (Branches_ID, Location, Contact_Info, Manager_ID, Number_of_Employees) VALUES ('B001', 'HAPUGALA', '0765590234', 'M001', 5) 7 rows(s) affected Records: 7 Duplicates: 0 Warnings: 0 0.00 sec
33 10:23:30 INSERT INTO Employee (Employee_ID, Employee_Name, Position, Salary, Branches_ID) VALUES ('E001', 'Sushil', 80000, 'B001'), ('E002', 'Anil', 80000, 'B001') 7 rows(s) affected Records: 7 Duplicates: 0 Warnings: 0 0.016 sec
34 10:23:46 INSERT INTO SUPPLIER_INFO (Supply_ID, Name, Ingredients, Quantity, Contact_Number) VALUES ('S001', 'SENITH', 'sugar', 40, '0705664580') 7 rows(s) affected Records: 7 Duplicates: 0 Warnings: 0 0.00 sec
35 10:24:01 INSERT INTO Take_Away (Order_No, Branch_ID) VALUES ('W001', 'B002'), ('W003', 'B001'), ('W005', 'B002'), ('W006', 'B004'), ('W007', 'B002') 7 rows(s) affected Records: 7 Duplicates: 0 Warnings: 0 0.00 sec
Object Info Session
Query Completed
```

MySQL Workbench Local instance MySQL80

Schemas: bakery\_system

Tables: branches, customer, delivery, delivery\_product, employee, manager, order\_product, product, supplier\_info, take\_away, transaction

Result Grid:

Customer_ID	Name	Phone_Number	Home_Number	Street	City
A001	Kamal	0722345678	No 12	Main road	Kandy
A002	Kamal	0755980234	No 9	School road	Kalugashola
A003	Arun	0722449987	No 4	temple road	Pedderiya
A004	Rimal	0702386794	No 5	ABC road	Pedderiya
A005	Anil	0701253689	No 234	Camus Road	Kandy
A006	Angie	0702345473	No 123	Bellville road	Kalugashola
A007	Rimal	0703448572	No 384	temple road	Kandy

customer 1 | Output

Action Output:

#	Time	Action	Message	Duration / Fetch
41	10:28:34	SELECT * FROM bakery_system.manager LIMIT 0, 1000	7row(s) returned	0.000 sec / 0.000 sec
42	10:28:35	SELECT * FROM bakery_system.order_product LIMIT 0, 1000	9row(s) returned	0.000 sec / 0.000 sec
43	10:28:36	SELECT * FROM bakery_system.product LIMIT 0, 1000	7row(s) returned	0.000 sec / 0.000 sec
44	10:28:37	SELECT * FROM bakery_system.supplier_info LIMIT 0, 1000	7row(s) returned	0.000 sec / 0.000 sec
45	10:28:38	SELECT * FROM bakery_system.take_away LIMIT 0, 1000	7row(s) returned	0.000 sec / 0.000 sec
46	10:28:39	SELECT * FROM bakery_system.transaction LIMIT 0, 1000	7row(s) returned	0.000 sec / 0.000 sec

Object Info | Session | Query Completed

MySQL Workbench Local instance MySQL80

Schemas: bakery\_system

Tables: branches, customer, delivery, delivery\_product, employee, manager, order\_product, product, supplier\_info, take\_away, transaction

Result Grid:

Order_ID	Order_Date	Status	Total_Amount	Customer_ID
W001	2024-10-03	Delivery	70	A001
W002	2024-10-03	Delivery	70	A002
W003	2024-10-03	Delivery	120	A003
W004	2024-10-04	Take away	100	A003
W005	2024-10-05	Delivery	70	A005
W006	2024-10-05	Take away	100	A004
W007	2024-10-07	Take away	60	A006

transaction 1 | Output

Action Output:

#	Time	Action	Message	Duration / Fetch
41	10:28:34	SELECT * FROM bakery_system.manager LIMIT 0, 1000	7row(s) returned	0.000 sec / 0.000 sec
42	10:28:35	SELECT * FROM bakery_system.order_product LIMIT 0, 1000	9row(s) returned	0.000 sec / 0.000 sec
43	10:28:36	SELECT * FROM bakery_system.product LIMIT 0, 1000	7row(s) returned	0.000 sec / 0.000 sec
44	10:28:37	SELECT * FROM bakery_system.supplier_info LIMIT 0, 1000	7row(s) returned	0.000 sec / 0.000 sec
45	10:28:38	SELECT * FROM bakery_system.take_away LIMIT 0, 1000	7row(s) returned	0.000 sec / 0.000 sec
46	10:28:39	SELECT * FROM bakery_system.transaction LIMIT 0, 1000	7row(s) returned	0.000 sec / 0.000 sec

Object Info | Session | Query Completed

MySQL Workbench Local instance MySQL80 X

File Edit View Query Database Server Tools Scripting Help

employee SQL File 3\* SQL File 4\* SQL File 5\* SQL File 6\* branches customer delivery delivery\_product employee manager order\_product product supplier\_info take\_away transaction

Filter objects

**bakery\_system**

- Tables
  - branches
  - customer
  - delivery
  - delivery\_product
  - employee
  - manager
  - order\_product
  - product
  - supplier\_info
  - take\_away
  - transaction
- Views
- Stored Procedures
- Functions
- Triggers
- Procs
- fob\_23
- hospital\_ms
- mydatabase
- myisam
- printers
- saiki
- sch2
- sys
- undbckup

Administration Schemas

No object selected

order\_product 1 \* Read Only

Action Output

#	Time	Action	Message	Duration / Fetch
41	10:28:34	SELECT * FROM bakery_system.manager LIMIT 0, 1000	7row(s) returned	0.000 sec / 0.000 sec
42	10:28:35	SELECT * FROM bakery_system.order_product LIMIT 0, 1000	9row(s) returned	0.000 sec / 0.000 sec
43	10:28:36	SELECT * FROM bakery_system.product LIMIT 0, 1000	7row(s) returned	0.000 sec / 0.000 sec
44	10:28:37	SELECT * FROM bakery_system.supplier_info LIMIT 0, 1000	7row(s) returned	0.000 sec / 0.000 sec
45	10:28:38	SELECT * FROM bakery_system.take_away LIMIT 0, 1000	7row(s) returned	0.000 sec / 0.000 sec
46	10:28:39	SELECT * FROM bakery_system.transaction LIMIT 0, 1000	7row(s) returned	0.000 sec / 0.000 sec

Object Info Session Query Completed

MySQL Workbench Local instance MySQL80 X

File Edit View Query Database Server Tools Scripting Help

employee SQL File 3\* SQL File 4\* SQL File 5\* SQL File 6\* branches customer delivery delivery\_product employee manager order\_product product supplier\_info take\_away transaction

Filter objects

**bakery\_system**

- Tables
  - branches
  - customer
  - delivery
  - delivery\_product
  - employee
  - manager
  - order\_product
  - product
  - supplier\_info
  - take\_away
  - transaction
- Views
- Stored Procedures
- Functions
- Triggers
- Procs
- fob\_23
- hospital\_ms
- mydatabase
- myisam
- printers
- saiki
- sch2
- sys
- undbckup

Administration Schemas

No object selected

product 1 \* Read Only

Action Output

#	Time	Action	Message	Duration / Fetch
41	10:28:34	SELECT * FROM bakery_system.manager LIMIT 0, 1000	7row(s) returned	0.000 sec / 0.000 sec
42	10:28:35	SELECT * FROM bakery_system.order_product LIMIT 0, 1000	9row(s) returned	0.000 sec / 0.000 sec
43	10:28:36	SELECT * FROM bakery_system.product LIMIT 0, 1000	7row(s) returned	0.000 sec / 0.000 sec
44	10:28:37	SELECT * FROM bakery_system.supplier_info LIMIT 0, 1000	7row(s) returned	0.000 sec / 0.000 sec
45	10:28:38	SELECT * FROM bakery_system.take_away LIMIT 0, 1000	7row(s) returned	0.000 sec / 0.000 sec
46	10:28:39	SELECT * FROM bakery_system.transaction LIMIT 0, 1000	7row(s) returned	0.000 sec / 0.000 sec

Object Info Session Query Completed

MySQL Workbench Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

employee SQL File 3\* SQL File 4\* SQL File 5\* SQL File 6\* branches customer delivery delivery\_product employee manager order\_product product supplier\_info take\_away transaction

Result Grid Filter Rows | Edit | Wrap Cell Content |

Delivery_ID	Name	Contact_Info
D0001	Ramya	072219678
D0002	Kanishka	0765890234
D0003	Ama	0722385794
D0004	Sai	0722385793
D0005	Anitha	0722385795
D0006	Sunitha	0723498572
D0007	Natali	0723498582

Object Info Session Query Completed

Delivery I x

Action Output

#	Time	Action	Message	Duration / Fetch
41	10:28:34	SELECT * FROM bakery_system.manager LIMIT 0, 1000	7row(s) returned	0.000 sec / 0.000 sec
42	10:28:35	SELECT * FROM bakery_system.order_product LIMIT 0, 1000	9row(s) returned	0.000 sec / 0.000 sec
43	10:28:36	SELECT * FROM bakery_system.product LIMIT 0, 1000	7row(s) returned	0.000 sec / 0.000 sec
44	10:28:37	SELECT * FROM bakery_system.supplier_info LIMIT 0, 1000	7row(s) returned	0.000 sec / 0.000 sec
45	10:28:38	SELECT * FROM bakery_system.take_away LIMIT 0, 1000	7row(s) returned	0.000 sec / 0.000 sec
46	10:28:39	SELECT * FROM bakery_system.transaction LIMIT 0, 1000	7row(s) returned	0.000 sec / 0.000 sec

10:29 AM 4/6/2024

MySQL Workbench Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

employee SQL File 3\* SQL File 4\* SQL File 5\* SQL File 6\* branches customer delivery delivery\_product employee manager order\_product product supplier\_info take\_away transaction

Result Grid Filter Rows | Export | Wrap Cell Content |

Delivery_ID	Product_ID
D0001	P001
D0002	P002
D0003	P001
D0004	P001
D0005	P002
D0006	P003
D0007	P004

Object Info Session Query Completed

Delivery\_products I x

Action Output

#	Time	Action	Message	Duration / Fetch
41	10:28:34	SELECT * FROM bakery_system.manager LIMIT 0, 1000	7row(s) returned	0.000 sec / 0.000 sec
42	10:28:35	SELECT * FROM bakery_system.order_product LIMIT 0, 1000	9row(s) returned	0.000 sec / 0.000 sec
43	10:28:36	SELECT * FROM bakery_system.product LIMIT 0, 1000	7row(s) returned	0.000 sec / 0.000 sec
44	10:28:37	SELECT * FROM bakery_system.supplier_info LIMIT 0, 1000	7row(s) returned	0.000 sec / 0.000 sec
45	10:28:38	SELECT * FROM bakery_system.take_away LIMIT 0, 1000	7row(s) returned	0.000 sec / 0.000 sec
46	10:28:39	SELECT * FROM bakery_system.transaction LIMIT 0, 1000	7row(s) returned	0.000 sec / 0.000 sec

10:29 AM 4/6/2024

MySQL Workbench

Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

employee SQL File 3" SQL File 4" SQL File 5" SQL File 6" branches customer delivery delivery\_product employees manager order\_product product supplier\_info take\_away transaction

**Schemas**

bakery\_system

Tables

- branches
- customer
- delivery
- delivery\_product
- employee
- manager
- order\_product
- product
- supplier\_info
- take\_away
- transaction

Views

Stored Procedures

Functions

dbmsprop

fci

fv\_23

hospital\_ms

mydatabase

mydb

practitioner

selvin

sch1

sch2

sys

Administration Schemas

Information

No object selected

employee 1

Output

Action Output

Employee_ID	Employee_Name	Position	Salary	Branches_ID
E001	Sasi	Chef	40000	B001
E002	Anil	Chef	60000	B001
E003	Melith	Delivery boy	30000	B002
E004	Jagath	worker	40000	B002
E005	Malith	worker	40000	B001
E006	Ganesh	Cashier	50000	B001
E007	Himanshu	Chef	60000	B002
E008	Meena	Cashier	50000	B002

Object Info Session Query Completed

10:29 AM 4/6/2024

MySQL Workbench

Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

employee SQL File 3" SQL File 4" SQL File 5" SQL File 6" branches customer delivery delivery\_product employees manager order\_product product supplier\_info take\_away transaction

**Schemas**

bakery\_system

Tables

- branches
- customer
- delivery
- delivery\_product
- employee
- manager
- order\_product
- product
- supplier\_info
- take\_away
- transaction

Views

Stored Procedures

Functions

dbmsprop

fci

fv\_23

hospital\_ms

mydatabase

mydb

practitioner

selvin

sch1

sch2

sys

Administration Schemas

Information

No object selected

branches 1

Output

Action Output

Branches_ID	Location	Contact_Info	Number_of_Employees	Manager_ID
B001	HAPUIGALA	0703890234	5	M001
B002	GALLE JUNCTION	0703867904	7	M002
B003	WANIWELLA	0701225069	3	M003
B004	BATIWANTIDA	0705285732	2	M004
B005	WEERAWALA	074552522	5	M005
B006	HALLIGAMA	070242452	3	M006
B007	HAPUIGALA	070353542	4	M007

Object Info Session Query Completed

10:29 AM 4/6/2024

**MySQL Workbench**

File Edit View Query Database Server Tools Scripting Help

employee SQL File 3\* SQL File 4\* SQL File 5\* SQL File 6\* branches customer delivery delivery\_product employee manager order\_product product supplier\_info take\_away transaction

1 • SELECT \* FROM bakery\_system.manager;

Result Grid | Filter Rows | Edit | Export/Import | Wrap Cell Content |

Manager_ID	Manager_Name
M001	Kamal
M002	Suri
M003	Nisha
M004	Soham
M005	Dharmik
M006	Waran
M007	Alokananda
M008	Malika

manager 1 | Output | Action Output |

#	Time	Action	Message	Duration / Fetch
41	10:28:34	SELECT * FROM bakery_system.manager LIMIT 0, 1000	7rows  returned	0.000 sec / 0.000 sec
42	10:28:35	SELECT * FROM bakery_system.order_product LIMIT 0, 1000	9rows  returned	0.000 sec / 0.000 sec
43	10:28:36	SELECT * FROM bakery_system.product LIMIT 0, 1000	7rows  returned	0.000 sec / 0.000 sec
44	10:28:37	SELECT * FROM bakery_system.supplier_info LIMIT 0, 1000	7rows  returned	0.000 sec / 0.000 sec
45	10:28:38	SELECT * FROM bakery_system.take_away LIMIT 0, 1000	7rows  returned	0.000 sec / 0.000 sec
46	10:28:39	SELECT * FROM bakery_system.transaction LIMIT 0, 1000	7rows  returned	0.000 sec / 0.000 sec

Object Info : Session | Query Completed | 10:29 AM 4/6/2024

**MySQL Workbench**

File Edit View Query Database Server Tools Scripting Help

employee SQL File 3\* SQL File 4\* SQL File 5\* SQL File 6\* branches customer delivery delivery\_product employee manager order\_product product supplier\_info take\_away transaction

1 • SELECT \* FROM bakery\_system.supplier\_info;

Result Grid | Filter Rows | Edit | Export/Import | Wrap Cell Content |

Supplier_ID	Name	Ingredients	Quantity	Contact_Number
S001	SENITH	sugar	40	0765661588
S002	KALAI	flour	75	0723940246
S003	SUDI	flour	25	0723940247
S004	KOSALA	egg	15	0723940245
S005	PASSAN	flour	40	0736344524
S006	PASIDH	eggs	20	0714556442
S007	SUNITHA	sugar	40	0746778959
S008	MONI	flour	30	0736344523

supplier\_info 1 | Output | Action Output |

#	Time	Action	Message	Duration / Fetch
41	10:28:34	SELECT * FROM bakery_system.manager LIMIT 0, 1000	7rows  returned	0.000 sec / 0.000 sec
42	10:28:35	SELECT * FROM bakery_system.order_product LIMIT 0, 1000	9rows  returned	0.000 sec / 0.000 sec
43	10:28:36	SELECT * FROM bakery_system.product LIMIT 0, 1000	7rows  returned	0.000 sec / 0.000 sec
44	10:28:37	SELECT * FROM bakery_system.supplier_info LIMIT 0, 1000	7rows  returned	0.000 sec / 0.000 sec
45	10:28:38	SELECT * FROM bakery_system.take_away LIMIT 0, 1000	7rows  returned	0.000 sec / 0.000 sec
46	10:28:39	SELECT * FROM bakery_system.transaction LIMIT 0, 1000	7rows  returned	0.000 sec / 0.000 sec

Object Info : Session | Query Completed | 10:29 AM 4/6/2024

MySQL Workbench Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

employee SQL File 3\* SQL File 4\* SQL File 5\* SQL File 6\* branches customer delivery delivery\_product employee manager order\_product product supplier\_info take\_away transaction

1 \* SELECT \* FROM bakery\_system.take\_away;

**Result Grid** Filter Rows | Exports | Wrap Cell Content | Result Set Form Editor Field Types Query Test Execution Plan

Order_No	Branch_ID
W001	8002
W003	8001
W005	8002
W006	8004
W007	8002
W008	8005
W009	8007

No object selected

table\_away 1 \* Read Only

Action Output

#	Time	Action	Message	Duration / Fetch
41	10:28:34	SELECT * FROM bakery_system.manager LIMIT 0, 1000	7rows  returned	0.000 sec / 0.000 sec
42	10:28:35	SELECT * FROM bakery_system.order_product LIMIT 0, 1000	9rows  returned	0.000 sec / 0.000 sec
43	10:28:36	SELECT * FROM bakery_system.product LIMIT 0, 1000	7rows  returned	0.000 sec / 0.000 sec
44	10:28:37	SELECT * FROM bakery_system.supplier_info LIMIT 0, 1000	7rows  returned	0.000 sec / 0.000 sec
45	10:28:38	SELECT * FROM bakery_system.take_away LIMIT 0, 1000	7rows  returned	0.000 sec / 0.000 sec
46	10:28:39	SELECT * FROM bakery_system.transaction LIMIT 0, 1000	7rows  returned	0.000 sec / 0.000 sec

Object Info Session Query Completed

## 4.2 Alterations in Tables

## **Updating and Deleting**

The screenshot shows the MySQL Workbench interface with the following details:

- File Bar:** File, Edit, View, Query, Database, Server, Tools, Scripting, Help.
- Schemas:** Local instance MySQL80, employee, SQL File 3\*, SQL File 4\*, SQL File 5\*, SQL File 6\*, SQL File 7\*, Limit to 500 rows.
- Navigator:** Filter objects, bakery\_system (Tables: branches, customer, delivery, delivery\_product, employee, manager, order\_product, product, supplier\_info, take\_away), transaction (Triggers, Functions, Procedures, Functions, Triggers), stored\_procedures, dmbsproject, fe, fo, fo\_25, myadmin\_me, mydatabase, mydb, prantsev, seale, sys, Administration, Schemas.
- Information:** No object selected.
- Output:** Action Output tab showing the execution history of the current session. The log includes:

  - 54 10:34:18 UPDATE Delivery\_Product SET Product\_ID = 'P004' WHERE Delivery\_ID = 'D001';
  - 55 10:34:28 UPDATE Employee SET Employee\_Name = 'SUMITH' WHERE Employee\_ID = 'E001';
  - 56 10:34:41 UPDATE BRANCHES SET Location = 'WIJERAMA' WHERE Branches\_ID = 'B001';
  - 57 10:34:53 UPDATE MANAGER\_Set Manager\_Name = 'SUSI' WHERE Manager\_ID = 'M001';
  - 58 10:35:07 UPDATE SUPPLIER\_INFO SET Name = 'KASUN' WHERE Supply\_ID = 'S001';
  - 59 10:35:18 UPDATE Take\_Away SET Branch\_ID = 'B005' WHERE Order\_Ns = 'W001' AND Branch\_ID = 'B002';

- Object Info:** Session.
- Query Completed:** The status bar at the bottom right indicates the time as 10:35 AM and the date as 4/6/2024.

MySQL Workbench Local instance MySQL80

Schemas: bakery\_system

Tables: branches, customer, delivery, delivery\_product, employee, manager, order\_product, product, supplier\_info, take\_away, transaction

Result Grid: SELECT \* FROM bakery\_system.customer;

Customer_ID	Name	Phone_Number	Home_Number	Street	City
A001	NDIYAN	0702349678	No 304	Main road	Kandy
A002	Kamal	07655995234	No 5	School road	Katugastota
A003	Arun	0712340987	No 4	Temple road	Penarayya
A004	Himal	0702388794	No 5	ABC road	Penarayya
A005	Anil	0701235889	No 234	Cameo Road	Kandy
A006	Angie	0702345472	No 305	Temple road	Katugastota
A007	Bimal	070348872	No 354	Temple road	Kandy

customer 1 | Output

Action Output

#	Time	Action	Message	Duration / Fetch
65	10:36:51	SELECT * FROM bakery_system.manager LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec
66	10:36:52	SELECT * FROM bakery_system.order_product LIMIT 0, 500	9row(s) returned	0.000 sec / 0.000 sec
67	10:36:53	SELECT * FROM bakery_system.product LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec
68	10:36:53	SELECT * FROM bakery_system.supplier_info LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec
69	10:36:54	SELECT * FROM bakery_system.take_away LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec
70	10:36:55	SELECT * FROM bakery_system.transaction LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec

Object Info | Session | Query Completed

MySQL Workbench Local instance MySQL80

Schemas: bakery\_system

Tables: branches, customer, delivery, delivery\_product, employee, manager, order\_product, product, supplier\_info, take\_away, transaction

Result Grid: SELECT \* FROM bakery\_system.transaction;

Order_ID	Order_Date	Status	Total_Amount	Customer_ID
W001	2024-10-03	Take away	90	A001
W002	2024-10-03	Delivery	70	A002
W003	2024-10-03	Delivery	120	A002
W004	2024-10-04	Take away	100	A003
W005	2024-10-05	Delivery	70	A005
W006	2024-10-06	Take away	100	A004
W007	2024-10-07	Take away	60	A006

transaction 1 | Output

Action Output

#	Time	Action	Message	Duration / Fetch
65	10:36:51	SELECT * FROM bakery_system.manager LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec
66	10:36:52	SELECT * FROM bakery_system.order_product LIMIT 0, 500	9row(s) returned	0.000 sec / 0.000 sec
67	10:36:53	SELECT * FROM bakery_system.product LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec
68	10:36:53	SELECT * FROM bakery_system.supplier_info LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec
69	10:36:54	SELECT * FROM bakery_system.take_away LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec
70	10:36:55	SELECT * FROM bakery_system.transaction LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec

Object Info | Session | Query Completed

MySQL Workbench Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

Navigator: employee SQL File 3\* SQL File 4\* SQL File 5\* SQL File 6\* branches customer delivery delivery\_product employee manager order\_product product supplier\_info take\_away transaction

Schemas Filter objects

bakery\_system Tables branches customer delivery delivery\_product employee manager order\_product product supplier\_info take\_away transaction Views Stored Procedures Functions dbmsprocedures Fts fts\_23 hospital\_ms mydatabase mydb practice seale ach2 sys Administration Schemas Information

No object selected

order\_product1.x

Output

Action Output

#	Time	Action	Message	Duration / Fetch
65	10:36:51	SELECT * FROM bakery_system.manager LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec
66	10:36:52	SELECT * FROM bakery_system.order_product LIMIT 0, 500	9row(s) returned	0.000 sec / 0.000 sec
67	10:36:53	SELECT * FROM bakery_system.product LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec
68	10:36:53	SELECT * FROM bakery_system.supplier_info LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec
69	10:36:54	SELECT * FROM bakery_system.take_away LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec
70	10:36:55	SELECT * FROM bakery_system.transaction LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec

Object Info Session Query Completed

Order_ID	Product_ID
W001	P001
W001	P003
W001	P007
W002	P005
W003	P002
W004	P003
W005	P001
W006	P003
W007	P004

MySQL Workbench Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

Navigator: employee SQL File 3\* SQL File 4\* SQL File 5\* SQL File 6\* branches customer delivery delivery\_product employee manager order\_product product supplier\_info take\_away transaction

Schemas Filter objects

bakery\_system Tables branches customer delivery delivery\_product employee manager order\_product product supplier\_info take\_away transaction Views Stored Procedures Functions dbmsprocedures Fts fts\_23 hospital\_ms mydatabase mydb practice seale ach2 sys Administration Schemas Information

No object selected

product1.x

Output

Action Output

#	Time	Action	Message	Duration / Fetch
65	10:36:51	SELECT * FROM bakery_system.manager LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec
66	10:36:52	SELECT * FROM bakery_system.order_product LIMIT 0, 500	9row(s) returned	0.000 sec / 0.000 sec
67	10:36:53	SELECT * FROM bakery_system.product LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec
68	10:36:53	SELECT * FROM bakery_system.supplier_info LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec
69	10:36:54	SELECT * FROM bakery_system.take_away LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec
70	10:36:55	SELECT * FROM bakery_system.transaction LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec

Object Info Session Query Completed

Product_ID	Stock_Quantity	Name	Price_of_One_Item
P001	90	Egg bun	50
P002	40	Choco bun	120
P003	50	Fish bun	100
P004	50	Jew bun	60
P005	46	Cake	120
P006	72	Bread	65
P007	80	Gato	50

MySQL Workbench Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

employee SQL File 3\* SQL File 4\* SQL File 5\* SQL File 6\* branches customer delivery delivery\_product employee manager order\_product product supplier\_info take\_away transaction

Result Grid Filter Rows | Edit: | Export/Import | Wrap Cell Content |

Delivery\_ID Name Contact\_Info

0001	Sunita	0702305678
0002	Kamal	0765900334
0003	Amit	070226794
0004	Sunita	0702305689
0005	Rakesh	0702305673
0006	Smith	0702305672
0007	Ravi	0734345262

Object Info Session Query Completed

Delivery I x

Action Output

#	Time	Action	Message	Duration / Fetch
65	10:36:51	SELECT * FROM bakery_system.manager LIMIT 0, 500	7rows(s) returned	0.000 sec / 0.000 sec
66	10:36:52	SELECT * FROM bakery_system.order_product LIMIT 0, 500	9row(s) returned	0.000 sec / 0.000 sec
67	10:36:53	SELECT * FROM bakery_system.product LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec
68	10:36:53	SELECT * FROM bakery_system.supplier_info LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec
69	10:36:54	SELECT * FROM bakery_system.take_away LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec
70	10:36:55	SELECT * FROM bakery_system.transaction LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec

10:37 AM 4/6/2024

MySQL Workbench Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

employee SQL File 3\* SQL File 4\* SQL File 5\* SQL File 6\* branches customer delivery delivery\_product employee manager order\_product product supplier\_info take\_away transaction

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

Delivery\_ID Product\_ID

0001	P004
0002	P007
0003	P001
0004	P001
0005	P002
0006	P003
0007	P004

Object Info Session Query Completed

Delivery\_product I x

Action Output

#	Time	Action	Message	Duration / Fetch
65	10:36:51	SELECT * FROM bakery_system.manager LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec
66	10:36:52	SELECT * FROM bakery_system.order_product LIMIT 0, 500	9row(s) returned	0.000 sec / 0.000 sec
67	10:36:53	SELECT * FROM bakery_system.product LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec
68	10:36:53	SELECT * FROM bakery_system.supplier_info LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec
69	10:36:54	SELECT * FROM bakery_system.take_away LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec
70	10:36:55	SELECT * FROM bakery_system.transaction LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec

10:37 AM 4/6/2024

MySQL Workbench Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

employee SQL File 3\* SQL File 4\* SQL File 5\* SQL File 6\* branches customer delivery delivery\_product employee manager order\_product product supplier\_info take\_away transaction

Result Grid Filter Rows Edit Export/Imports Wrap Cell Content

Employee\_ID Employee\_Name Position Salary Branches\_ID

E001	SUMITH	chef	80000	B001
E002	Anil	chef	60000	B001
E003	Hari	Delivery boy	30000	B001
E004	Dinesh	Delivery boy	40000	B002
E005	Mohan	worker	40000	B001
E006	Ganes	Chef	50000	B001
E007	Neha	chef	60000	B002
E008	HEM	HEM	HEM	HEM

Output

Action Output

#	Time	Action	Message	Duration / Fetch
65	10:36:51	SELECT * FROM bakery_system.manager LIMIT 0, 500	7rows returned	0.000 sec / 0.000 sec
66	10:36:52	SELECT * FROM bakery_system.order_product LIMIT 0, 500	9rows returned	0.000 sec / 0.000 sec
67	10:36:53	SELECT * FROM bakery_system.product LIMIT 0, 500	7rows returned	0.000 sec / 0.000 sec
68	10:36:53	SELECT * FROM bakery_system.supplier_info LIMIT 0, 500	7rows returned	0.000 sec / 0.000 sec
69	10:36:54	SELECT * FROM bakery_system.take_away LIMIT 0, 500	7rows returned	0.000 sec / 0.000 sec
70	10:36:55	SELECT * FROM bakery_system.transaction LIMIT 0, 500	7rows returned	0.000 sec / 0.000 sec

Object Info Session

Query Completed

MySQL Workbench Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

employee SQL File 3\* SQL File 4\* SQL File 5\* SQL File 6\* branches customer delivery delivery\_product employee manager order\_product product supplier\_info take\_away transaction

Result Grid Filter Rows Edit Export/Imports Wrap Cell Content

Branches\_ID Location Number\_of\_Employees Manager\_ID

B001	VILLAGA	0705895251	5	M001
B002	DALE MINTON	0703067947	7	M002
B003	WICKELLA	0701235699	3	M003
B004	BATMANVILLA	0705205472	2	M004
B005	WIPRAMA	0745525222	5	M005
B006	KALGAMA	0712424522	3	M006
B007	HAPUGALA	070535342	4	M007
B008	HEM	HEM	HEM	HEM

Output

Action Output

#	Time	Action	Message	Duration / Fetch
65	10:36:51	SELECT * FROM bakery_system.manager LIMIT 0, 500	7rows returned	0.000 sec / 0.000 sec
66	10:36:52	SELECT * FROM bakery_system.order_product LIMIT 0, 500	9rows returned	0.000 sec / 0.000 sec
67	10:36:53	SELECT * FROM bakery_system.product LIMIT 0, 500	7rows returned	0.000 sec / 0.000 sec
68	10:36:53	SELECT * FROM bakery_system.supplier_info LIMIT 0, 500	7rows returned	0.000 sec / 0.000 sec
69	10:36:54	SELECT * FROM bakery_system.take_away LIMIT 0, 500	7rows returned	0.000 sec / 0.000 sec
70	10:36:55	SELECT * FROM bakery_system.transaction LIMIT 0, 500	7rows returned	0.000 sec / 0.000 sec

Object Info Session

Query Completed

MySQL Workbench

Local instance MySQL80 x

File Edit View Query Database Server Tools Scripting Help

employee SQL File 3" SQL File 4" SQL File 5" SQL File 6" branches customer delivery delivery\_product employee manager order\_product product supplier\_info take\_away transaction

Schemas Filter objects

bakery\_system Tables branches customer delivery delivery\_product employee manager manager\_order\_product product supplier\_info take\_away transaction Views Stored Procedures Functions dbmsproject fo\_23 hospital\_ms mydatabase mydb pretest seattle sch2 sys Administration Schemas Information

No object selected

manager 1 x

Output

Action Object: Action

Time	Action	Message	Duration / Epoch
65	10:36:51	SELECT * FROM bakery_system.manager LIMIT 0, 500	7row(s) returned 0.000 sec / 0.000 sec
66	10:36:52	SELECT * FROM bakery_system.order_product LIMIT 0, 500	9row(s) returned 0.000 sec / 0.000 sec
67	10:36:53	SELECT * FROM bakery_system.product LIMIT 0, 500	7row(s) returned 0.000 sec / 0.000 sec
68	10:36:53	SELECT * FROM bakery_system.supplier_info LIMIT 0, 500	7row(s) returned 0.000 sec / 0.000 sec
69	10:36:54	SELECT * FROM bakery_system.take_away LIMIT 0, 500	7row(s) returned 0.000 sec / 0.000 sec
70	10:36:55	SELECT * FROM bakery_system.transaction LIMIT 0, 500	7row(s) returned 0.000 sec / 0.000 sec

Object Info Session Query Completed

Manager_ID	Manager_Name	Manager_Salary
M001	Suresh	5000
M002	Ramli	5000
M003	Nisha	5000
M004	Smith	5000
M005	Deshmi	5000
M006	Vishal	5000
M007	Akashika	5000

MySQL Workbench

Local instance MySQL80 x

File Edit View Query Database Server Tools Scripting Help

employee SQL File 3" SQL File 4" SQL File 5" SQL File 6" branches customer delivery delivery\_product employee manager order\_product product supplier\_info take\_away transaction

Schemas Filter objects

bakery\_system Tables branches customer delivery delivery\_product employee manager manager\_order\_product product supplier\_info take\_away transaction Views Stored Procedures Functions dbmsproject fo\_23 hospital\_ms mydatabase mydb pretest seattle sch2 sys Administration Schemas Information

No object selected

supplier\_info 1 x

Output

Action Object: Action

Time	Action	Message	Duration / Epoch
65	10:36:51	SELECT * FROM bakery_system.manager LIMIT 0, 500	7row(s) returned 0.000 sec / 0.000 sec
66	10:36:52	SELECT * FROM bakery_system.order_product LIMIT 0, 500	9row(s) returned 0.000 sec / 0.000 sec
67	10:36:53	SELECT * FROM bakery_system.product LIMIT 0, 500	7row(s) returned 0.000 sec / 0.000 sec
68	10:36:53	SELECT * FROM bakery_system.supplier_info LIMIT 0, 500	7row(s) returned 0.000 sec / 0.000 sec
69	10:36:54	SELECT * FROM bakery_system.take_away LIMIT 0, 500	7row(s) returned 0.000 sec / 0.000 sec
70	10:36:55	SELECT * FROM bakery_system.transaction LIMIT 0, 500	7row(s) returned 0.000 sec / 0.000 sec

Object Info Session Query Completed

Supplier_ID	Name	Ingredients	Quantity	Contact_Number
S001	KALIN	sugar	40	07634461088
S002	Kamal	Flour	73	0733942046
S003	Sunil	flour	63	0794352246
S004	KOSALA	eggs	15	0724396149
S005	PASAN	sugar	40	07863452524
S006	PAWAN	sugar	20	07634461042
S007	SUNITHA	sugar	40	0746720509

MySQL Workbench Local instance MySQL80 X

File Edit View Query Database Server Tools Scripting Help

employee SQL File 3\* SQL File 4\* SQL File 5\* SQL File 6\* branches customer delivery delivery\_product employee manager order\_product product supplier\_info take\_away transaction

Schemas Filter objects

bakery\_system Tables branches customer delivery delivery\_product employee manager order\_product product supplier\_info take\_away views stored\_procedures Functions dm\_procedures fts\_23 hospital\_ms mydatabase roles practice skills arch sys

No object selected

take\_away 1 X Read Only

Output Action Output

#	Time	Action	Message	Duration / Fetch
65	10:36:51	SELECT * FROM bakery_system.manager LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec
66	10:36:52	SELECT * FROM bakery_system.order_product LIMIT 0, 500	9row(s) returned	0.000 sec / 0.000 sec
67	10:36:53	SELECT * FROM bakery_system.product LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec
68	10:36:53	SELECT * FROM bakery_system.supplier_info LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec
69	10:36:54	SELECT * FROM bakery_system.take_away LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec
70	10:36:55	SELECT * FROM bakery_system.transaction LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec

Object Info Session Query Completed

# Chapter 5

## Transactions

### 5.1 Simple database Retrievals

#### Select operation

The screenshot shows the MySQL Workbench interface with the following details:

- File Bar:** File, Edit, View, Query, Database, Server, Tools, Scripting, Help.
- Schemas:** Schemas dropdown, Filter objects, and the **bakery\_system** schema selected.
- SQL Editor:** SQL File 6\*, showing the query: `-- 1) select operation  
311 * SELECT * FROM Customer;`.
- Result Grid:** Displays the results of the query, showing 7 rows returned. The columns are Customer\_ID, Name, Contact\_Info, Home\_Number, Street, and City. The data includes entries for A001 (Nishan), A002 (Komal), A003 (Roshni), A004 (Neel), A005 (Anil), A006 (Amal), and A007 (Bimal).
- Output Window:** Action Output pane showing the execution log: "1 01:36:47 SELECT \* FROM Customer LIMIT 0,500" and "7rows returned".
- System Bar:** Shows the date and time as 4/7/2024 1:37 AM.

The screenshot shows the MySQL Workbench interface with the following details:

- File Bar:** File, Edit, View, Query, Database, Server, Tools, Scripting, Help.
- Schemas:** Schemas dropdown, Filter objects, and the **bakery\_system** schema selected.
- SQL Editor:** SQL File 6\*, showing the query: `-- 1) select operation  
311 * SELECT * FROM Customer;  
312 *  
313 * SELECT * FROM Employee where Position='chef';`.
- Result Grid:** Displays the results of the query, showing 3 rows returned. The columns are Employee\_ID, Employee\_Name, Position, Salary, and Branches\_ID. The data includes entries for E001 (Sunita), E002 (Anil), and E003 (Neela).
- Output Window:** Action Output pane showing the execution log: "1 01:36:47 SELECT \* FROM Customer LIMIT 0,500", "2 01:37:38 SELECT \* FROM Employee where Position='chef' LIMIT 0,500", and "3rows returned".
- System Bar:** Shows the date and time as 4/7/2024 1:37 AM.

## Project operation

MySQL Workbench

Local instance MySQL80 x unconnected x unconnected x

File Edit View Query Database Server Tools Scripting Help

Navigation: employees SQL File 3\* SQL File 4\* SQL File 5\* SQL File 6\* order\_product product employee transaction supplier\_info branches transaction customer

Filter objects

SCHEMAS

bakery\_system

- Tables
  - branches
  - customer
  - delivery
  - delivery\_product
  - employee
  - manager
  - order\_product
  - product
  - supplier\_info
  - take\_away
  - transaction
  - views
- Stored Procedures
- Functions
- dbmsobjects
- foreign keys
- Views

Administration Schemas

Information

Table: manager

Columns:

- Manager\_ID varchar(25) PK
- Manager\_Name varchar(25)

Employee 34 x

Output

Action Output

#	Time	Action	Message	Duration / F漱
1	01:36:47	SELECT * FROM Customer LIMIT 0, 500	7rows returned	0.015 sec / 0.000 sec
2	01:37:38	SELECT * FROM Employee where Position='chef' LIMIT 0, 500	3rows returned	0.000 sec / 0.000 sec
3	01:37:48	SELECT Employee_ID,Position FROM Employee LIMIT 0, 500	7rows returned	0.000 sec / 0.000 sec

Object Info Session

Query Completed

1:37 AM 4/7/2024

MySQL Workbench

Local instance MySQL80 x unconnected x unconnected x

File Edit View Query Database Server Tools Scripting Help

Navigation: employees SQL File 3\* SQL File 4\* SQL File 5\* SQL File 6\* order\_product product employee transaction supplier\_info branches transaction customer

Filter objects

SCHEMAS

bakery\_system

- Tables
  - branches
  - customer
  - delivery
  - delivery\_product
  - employee
  - manager
  - order\_product
  - product
  - supplier\_info
  - take\_away
  - transaction
  - views
- Stored Procedures
- Functions
- dbmsobjects
- foreign keys
- Views

Administration Schemas

Information

Table: manager

Columns:

- Manager\_ID varchar(25) PK
- Manager\_Name varchar(25)

product 35 x

Output

Action Output

#	Time	Action	Message	Duration / F漱
1	01:36:47	SELECT * FROM Customer LIMIT 0, 500	7rows returned	0.015 sec / 0.000 sec
2	01:37:38	SELECT * FROM Employee where Position='chef' LIMIT 0, 500	3rows returned	0.000 sec / 0.000 sec
3	01:37:48	SELECT Employee_ID,Position FROM Employee LIMIT 0, 500	7rows returned	0.000 sec / 0.000 sec
4	01:37:55	SELECT Name, Stock_quantity FROM product where price_of_one_item>100 LIMIT 0, 500	2rows returned	0.000 sec / 0.000 sec

Object Info Session

Query Completed

1:37 AM 4/7/2024

## Cartesian product operation

MySQL Workbench

Local instance MySQL80 x unconnected x unconnected x

File Edit View Query Database Server Tools Scripting Help

Navigator: Schemas Tables Views Stored Procedures Functions Triggers Triggers Views Administration: Schemas Information

SCHEMAS: bakery\_system

Tables: employees branches customers delivery delivery\_product employee order\_product product supplier\_info take\_away transaction views

Views:

Stored Procedures:

Functions:

Triggers:

Triggers:

Views:

Administration: Schemas

Information:

```

322 -- 3) cartesian product operation
323 * select * from delivery cross join delivery_products;
324 *
325 * select * from product cross join take_away;
326
327

```

Result Grid | Filter Rows | Export | Wrap Cell Content | Read Only

Delivery_ID	Name	Order_ID	Delivery_ID	Product_ID
0005	Nilesh	0702045020	D001	P004
0006	Sunith	0703098572	D001	P004
0007	Amith	0709085473	D001	P004
0008	Suri	0701036369	D001	P003
0009	Amil	0702036794	D001	P003
0002	Kamal	0706060202	D001	P004
0003	SUMITH	0702036794	D002	P007
0004	Nilesh	0703098572	D002	P007
0005	Amith	0709085473	D002	P007
0006	Sunith	0701036369	D002	P007
0007	Amil	0702036794	D002	P007
0008	Suri	0703098572	D003	P003
0009	Amil	0709085473	D003	P003
0002	Kamal	0706060202	D003	P003
0003	SUMITH	0702036794	D004	P001
0004	Nilesh	0703098572	D004	P001
0005	Amith	0709085473	D004	P001
0006	Sunith	0701036369	D004	P001
0007	Amil	0702036794	D004	P001

Result 36 | Read Only

Action Output | Duration / Fetch

#	Time	Action	Message	Duration / Fetch
1	01:36:47	SELECT * FROM Customer LIMIT 0, 500	7 rows/returned	0.015 sec / 0.000 sec
2	01:37:38	SELECT * FROM Employee where Postion='Chef' LIMIT 0, 500	3 rows/returned	0.000 sec / 0.000 sec
3	01:37:40	SELECT * FROM Employee_ID_Position TRIM Employee LIMIT 0, 500	7 rows/returned	0.000 sec / 0.000 sec
4	01:37:55	SELECT Name, Stock_Quantity FROM product where price_of_one_item<100 LIMIT 0, 500	2 rows/returned	0.000 sec / 0.000 sec
5	01:38:05	select * from delivery cross join delivery_product LIMIT 0, 500	63 rows/returned	0.000 sec / 0.000 sec

Object Info Session Query Completed

1:38 AM 4/7/2024

MySQL Workbench

Local instance MySQL80 x unconnected x unconnected x

File Edit View Query Database Server Tools Scripting Help

Navigator: Schemas Tables Views Stored Procedures Functions Triggers Triggers Views Administration: Schemas Information

SCHEMAS: bakery\_system

Tables: employees branches customers delivery delivery\_product employee order\_product product supplier\_info take\_away transaction views

Views:

Stored Procedures:

Functions:

Triggers:

Triggers:

Views:

Administration: Schemas

Information:

```

322 -- 3) cartesian product operation
323 * select * from delivery cross join delivery_products;
324 *
325 * select * from product cross join take_away;
326
327

```

Result Grid | Filter Rows | Export | Wrap Cell Content | Read Only

Product_ID	Stock_Quantity	Name	Price_of_One_Item	Order_ID	Branch_ID
P007	80	Bread	50	W001	W005
P005	75	Bread	65	W001	W005
P005	46	Cake	120	W001	W005
P003	50	Cake	60	W001	W005
P003	80	Pavbhaji	90	W001	W005
P002	40	Chicken bun	120	W001	W005
P001	90	Egg bun	90	W001	W005
P007	80	Gato	50	W003	W001
P006	73	Bread	65	W003	W001
P004	46	Choco bun	120	W003	W001
P004	60	Donut	90	W003	W001
P003	50	Fish bun	100	W003	W001
P002	40	Chicken bun	120	W003	W001
P001	90	Egg bun	90	W003	W001
P007	80	Gato	50	W005	W002
P006	73	Imaad	60	W005	W002
P004	46	Ice cream	90	W005	W002
P004	50	Jam bun	60	W005	W002
P003	50	Pav bhaji	100	W005	W002
P002	40	Chicken bun	120	W005	W002
P001	90	Egg bun	90	W005	W002
P007	80	Gato	50	W006	W004
P005	75	Ice cream	90	W006	W004
P005	46	Cake	120	W006	W004
P004	50	Jam bun	60	W006	W004
P003	50	Fish bun	100	W006	W004

Result 37 | Read Only

Action Output | Duration / Fetch

#	Time	Action	Message	Duration / Fetch
1	01:36:47	SELECT * FROM Customer LIMIT 0, 500	7 rows/returned	0.015 sec / 0.000 sec
2	01:37:38	SELECT * FROM Employee where Postion='Chef' LIMIT 0, 500	3 rows/returned	0.000 sec / 0.000 sec
3	01:37:40	SELECT * FROM Employee_ID_Position TRIM Employee LIMIT 0, 500	7 rows/returned	0.000 sec / 0.000 sec
4	01:37:55	SELECT Name, Stock_Quantity FROM product where price_of_one_item<100 LIMIT 0, 500	2 rows/returned	0.000 sec / 0.000 sec
5	01:38:05	select * from product cross join take_away LIMIT 0, 500	49 rows/returned	0.000 sec / 0.000 sec

Object Info Session Query Completed

1:38 AM 4/7/2024

## Creating a user view

The screenshot shows the MySQL Workbench interface with the following details:

- Schemas:** bakery\_system
- Tables:** branches, customer, delivery, delivered\_product, employee, manager, order\_product, product, transaction, supplier\_info, branches, transaction, customer.
- SQL Editor:** Contains the following SQL code:

```
-- 4) creating a user view
CREATE VIEW Kandy_customer AS
SELECT Customer_ID, Contact_Info
FROM Customer
WHERE city = 'Kandy';

-- SELECT * FROM Kandy_customer;
```
- Result Grid:** Shows the results of the query, listing three rows of customer information where city is 'Kandy'.

Customer_ID	Contact_Info
A001	070245678
A005	0701233689
A007	0703498572
- Output:** Displays the execution log with two entries:

#	Time	Action	Message	Duration / Path
1	01:40:34	CREATE VIEW Kandy_customer AS SELECT Customer_ID, Contact_Info FROM Customer WHERE city = 'Kandy'	0 row(s) affected	0.000 sec
2	01:40:39	SELECT * FROM Kandy_customer LIMIT 0, 500	3 row(s) returned	0.000 sec / 0.000 sec

## Renaming operation

The screenshot shows the MySQL Workbench interface with the following details:

- Schemas:** bakery\_system
- Tables:** branches, customer, delivery, delivered\_product, employee, manager, order\_product, product, transaction, supplier\_info, branches, transaction, customer.
- SQL Editor:** Contains the following SQL code:

```
-- 5) renaming operation
ALTER TABLE Customer RENAME COLUMN Phone_Number TO Contact_Info;
select * from Customer;
```
- Result Grid:** Shows the results of the query, listing eight rows of customer information.

Customer_ID	Name	Contact_Info	Home_number	Street	City
A001	RSPN	070245678	No 304	Main road	Kandy
A002	Kesel	070545234	No 9	School road	Katugastota
A003	Asru	070345678	No 4	temple road	Peraliya
A004	Natal	070345694	No 5	ABC road	Peddler
A005	Amel	0701233689	No 234	Campus Road	Kandy
A006	Amal	0709285473	No 13	temple road	Katugastota
A007	Bimal	0703498572	No 354	temple road	Kandy
- Output:** Displays the execution log with four entries:

#	Time	Action	Message	Duration / Path
1	01:41:34	CREATE VIEW Kandy_customer AS SELECT Customer_ID, Contact_Info FROM Customer WHERE city = 'Kandy'	0 row(s) affected	0.000 sec
2	01:40:39	SELECT * FROM Kandy_customer LIMIT 0, 500	3 row(s) returned	0.000 sec / 0.000 sec
3	01:41:14	ALTER TABLE Customer RENAME COLUMN Phone_Number TO Contact_Info	Error Code: 1054: Unknown column 'Phone_Number' in 'customer'	0.000 sec
4	01:41:47	select * from Customer LIMIT 0, 500	7 row(s) returned	0.000 sec / 0.000 sec

## Aggregation function

The screenshot shows the MySQL Workbench interface with the following details:

- Schemas:** The current schema is `bakery_system`.
- Tables:** The table `customer` is selected.
- Query Editor:** The SQL code is:

```
346 -- 6) aggregation function
347 *   SELECT Customer_ID, COUNT(*) AS NumberOfOrders
348   FROM Transaction
349   GROUP BY Customer_ID;
350
351
352
```
- Result Grid:** The results show the number of orders for each customer ID:

Customer_ID	NumberOfOrders
A001	1
A002	2
A003	1
A004	1
A005	1
A006	1
- Output Window:** Shows the execution log with the following entries:

#	Time	Action	Message	Duration / Path
1	01:40:34	CREATE VIEW Kandy_customer AS SELECT Customer_ID, Contact_Info FROM Customer WHERE city = 'Kandy'	0 row(s) affected	0.000 sec
2	01:40:39	SELECT * FROM Kandy_customer LIMIT 0,500	3 row(s) returned	0.000 sec / 0.000 sec
3	01:41:14	ALTER TABLE Customer RENAME COLUMN Phone_Number TO Contact_Info	Error Code: 1054: Unknown column 'Phone_Number' in 'customer'	0.000 sec
4	01:41:47	select * from Customer LIMIT 0,500	7 row(s) returned	0.000 sec / 0.000 sec
5	01:42:03	SELECT Customer_ID, COUNT(*) AS NumberOfOrders FROM Transaction GROUP BY Customer_ID LIMIT 0,500	6 row(s) returned	0.000 sec / 0.000 sec
6	01:42:12	SELECT * FROM Employee WHERE Employee_Name LIKE '%IN%'	3 row(s) returned	0.000 sec / 0.000 sec

## LIKE operation

The screenshot shows the MySQL Workbench interface with the following details:

- Schemas:** The current schema is `bakery_system`.
- Tables:** The table `Employee` is selected.
- Query Editor:** The SQL code is:

```
351 -- 7) LIKE operations
352 *   SELECT * FROM Employee WHERE Employee_Name LIKE '%IN%';
353
354 *   SELECT * FROM Customer WHERE Name LIKE '%IN%';
355
356
```
- Result Grid:** The results show employees whose names contain 'IN':

Employee_ID	Employee_Name	Position	Salary	Branch_ID
E001	GUNITH	chef	80000	E001
E003	Hanif	Delivery boy	30000	E001
E004	Asif	Cooker	40000	E002
E005	Rehan	Waiter	40000	E002
- Output Window:** Shows the execution log with the following entries:

#	Time	Action	Message	Duration / Path
1	01:40:34	CREATE VIEW Kandy_customer AS SELECT Customer_ID, Contact_Info FROM Customer WHERE city = 'Kandy'	0 row(s) affected	0.000 sec
2	01:40:39	SELECT * FROM Kandy_customer LIMIT 0,500	3 row(s) returned	0.000 sec / 0.000 sec
3	01:41:14	ALTER TABLE Customer RENAME COLUMN Phone_Number TO Contact_Info	Error Code: 1054: Unknown column 'Phone_Number' in 'customer'	0.000 sec
4	01:41:47	select * from Customer LIMIT 0,500	7 row(s) returned	0.000 sec / 0.000 sec
5	01:42:03	SELECT Customer_ID, COUNT(*) AS NumberOfOrders FROM Transaction GROUP BY Customer_ID LIMIT 0,500	6 row(s) returned	0.000 sec / 0.000 sec
6	01:42:12	SELECT * FROM Employee WHERE Employee_Name LIKE '%IN%'	3 row(s) returned	0.000 sec / 0.000 sec

MySQL Workbench

Local instance MySQL80 x unconnected x unconnected x

File Edit View Query Database Server Tools Scripting Help

Schemas

bakery\_system

Tables

employee SQL File 3\* SQL File 4\* SQL File 5\* order\_product product employee transaction supplier\_info branches transaction customer

Result Grid Filter Rows Edit Export/Import Wrap Cell Content

Customer\_ID Name Contact\_Info Home\_Number Street City

Customer_ID	Name	Contact_Info	Home_Number	Street	City
A001	Nishan	0702345678	No 334	Non road	Kandy
A004	Nimal	0702356754	No 5	ABC road	Peradeniya

Customer 42 x

Action Object

Time	Action	Message	Duration / Fps
2.0140.38	SELECT * FROM Kandy_customer LIMIT 0, 500	3 rows(s) returned	0.000 sec / 0.000 sec
3.0141.14	ALTER TABLE Customer RENAME COLUMN Phone_Number TO Contact_Info	Error Code: 1054. Unknown column 'Phone_Number' in 'customer'	0.000 sec
4.0141.47	select * from Customer LIMIT 0, 500	7 rows(s) returned	0.000 sec / 0.000 sec
5.0142.03	SELECT Customer_ID,COUNT(*) AS NumberOfOrders FROM Transaction GROUP BY Customer_ID LIMIT 0, 500	6 rows(s) returned	0.000 sec / 0.000 sec
6.0142.12	SELECT * FROM Employee WHERE Employee_Name LIKE '%n%' LIMIT 0, 500	3 rows(s) returned	0.000 sec / 0.000 sec
7.0142.10	SELECT * FROM Customer WHERE Name LIKE '%n%' LIMIT 0, 500	2 rows(s) returned	0.000 sec / 0.000 sec

Object Info Session

Query Completed

## 5.2 Complex database Retrievals

### Union operation

MySQL Workbench

Local instance MySQL80 x unconnected x unconnected x

File Edit View Query Database Server Tools Scripting Help

Schemas: Filter objects

bakery\_system

- tables
  - branches
  - customer
  - delivery
  - delivery\_product
  - employee
  - manager
  - order\_product
  - product
  - supplier\_info
  - take\_away
  - transaction
  - views
  - Stored Procedures
  - Functions
  - dmprocedures
  - foe
  - foe\_23
  - Tables
  - Views
- Administration Schemas

Information:

Table: manager

Columns:

Manager_ID	varchar(25)
PK	
Manager_Name	varchar(25)

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

Employee\_ID Employee\_Name Position Salary Brancher\_ID

E003	Mark	Delivery boy	30000	B001
E001	SUMITH	Chef	80000	B001
E002	Ant	Chef	60000	B001
E007	Nelska	Chef	60000	B002

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

Action Output |

# Time Action

3 01:41:14 ALTER TABLE Customer RENAME COLUMN Phone\_Number TO Contact\_Info

Message Error Code: 1054 Unknown column 'Phone\_Number' in 'customer'

0.000sec 0.000sec / 0.000 sec

4 01:41:47 select \* from Customer LIMIT 0, 500

7row(s) returned

0.000sec / 0.000 sec

5 01:42:03 SELECT Customer\_ID,COUNT(\*) AS NumberOfOrders FROM Transaction GROUP BY Customer\_ID LIMIT 0, 500

6row(s) returned

0.000sec / 0.000 sec

6 01:42:12 SELECT \* FROM Employee WHERE Employee\_Name LIKE '%in%' LIMIT 0, 500

3row(s) returned

0.000sec / 0.000 sec

7 01:42:18 SELECT \* FROM Customer WHERE Name LIKE '%in%' LIMIT 0, 500

2row(s) returned

0.000sec / 0.000 sec

8 01:42:29 (SELECT \* FROM Employee WHERE Position = 'Delivery boy')union (SELECT \* FROM Employee WHERE salary>50000)

4row(s) returned

0.000sec / 0.000 sec

9 01:42:29 (SELECT \* FROM Transaction WHERE status = 'Delivery')union (SELECT \* FROM Transaction WHERE Total\_Amount>100)

5row(s) returned

0.000sec / 0.000 sec

Object Info Session

Query Completed

1:42 AM 4/7/2024

MySQL Workbench

Local instance MySQL80 x unconnected x unconnected x

File Edit View Query Database Server Tools Scripting Help

Schemas: Filter objects

bakery\_system

- tables
  - branches
  - customer
  - delivery
  - delivery\_product
  - employee
  - manager
  - order\_product
  - product
  - supplier\_info
  - take\_away
  - transaction
  - views
  - Stored Procedures
  - Functions
  - dmprocedures
  - foe
  - foe\_23
  - Tables
  - Views
- Administration Schemas

Information:

Table: manager

Columns:

Manager_ID	varchar(25)
PK	
Manager_Name	varchar(25)

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

Order\_ID Order\_Date Status Total\_Amount Customer\_ID

W002	2024-10-03	Delivery	70	A002
W003	2024-10-03	Delivery	120	A002
W005	2024-10-05	Delivery	70	A005
W004	2024-10-04	Take away	100	A003
W006	2024-10-06	Take away	100	A004

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

Action Output |

# Time Action

4 01:41:47 select \* from Customer LIMIT 0, 500

7row(s) returned

0.000sec / 0.000 sec

5 01:42:03 SELECT Customer\_ID,COUNT(\*) AS NumberOfOrders FROM Transaction GROUP BY Customer\_ID LIMIT 0, 500

6row(s) returned

0.000sec / 0.000 sec

6 01:42:12 SELECT \* FROM Employee WHERE Employee\_Name LIKE '%in%' LIMIT 0, 500

3row(s) returned

0.000sec / 0.000 sec

7 01:42:18 SELECT \* FROM Customer WHERE Name LIKE '%in%' LIMIT 0, 500

2row(s) returned

0.000sec / 0.000 sec

8 01:42:29 (SELECT \* FROM Employee WHERE Position = 'Delivery boy')union (SELECT \* FROM Employee WHERE salary>50000)

4row(s) returned

0.000sec / 0.000 sec

9 01:42:36 (SELECT \* FROM Transaction WHERE status = 'Delivery')union (SELECT \* FROM Transaction WHERE Total\_Amount>100)

5row(s) returned

0.000sec / 0.000 sec

Object Info Session

Query Completed

1:42 AM 4/7/2024

## Intersection operation

MySQL Workbench

Local instance MySQL80 x unconnected x unconnected x

File Edit View Query Database Server Tools Scripting Help

Navigator: employees SQL File 3\* SQL File 4\* SQL File 5\* SQL File 6\* x order\_product product employee transaction supplier\_info branches transaction customer

Schemas: Filter objects

bakery\_system Tables: branches customer delivery delivery\_product employee order\_product products supplier\_info take\_away transaction views stored Procedures Functions dbmsprocedures fcc\_fei\_23 Tables Views Administration Schemas Information

```

365
366    -- 9) intersection operations
367    SELECT * FROM Customer WHERE city = 'Kandy'
368    INTERSECT
369    SELECT * FROM Customer WHERE name='ewal'
370
371    SELECT * FROM product WHERE Price_of_One_Item >= 100
372    INTERSECT
373    SELECT * FROM product WHERE Stock_Quantity >= 50
374
375
376

```

Result Grid | Filter Rows | Export | Wrap Cell Content: 13

Customer_ID	Name	Contact_Info	Home_Number	Street	City
A005	Anil	0701253689	No 234	Census Road	Kandy

Form Editor Field Types Query Stats Execution Plan

Table: manager

Columns:

- Manager\_ID varchar(25) PK
- Manager\_Name varchar(25)

Action Output

#	Time	Action	Message	Duration / Fetch
5	01:42:03	SELECT Customer_ID,COUNT(*) AS NumberOfOrders FROM Transaction GROUP BY Customer_ID LIMIT 0,500	6 row(s) returned	0.000 sec / 0.000 sec
6	01:42:12	SELECT * FROM Employee WHERE Employee_Name LIKE '%an%' LIMIT 0,500	3 row(s) returned	0.000 sec / 0.000 sec
7	01:42:18	SELECT * FROM Customer WHERE Name LIKE 'n%' LIMIT 0,500	2 row(s) returned	0.000 sec / 0.000 sec
8	01:42:29	(SELECT * FROM Employee WHERE Position = 'Delivery boy')union (SELECT * FROM Employee WHERE salary>50000)	4 row(s) returned	0.000 sec / 0.000 sec
9	01:42:36	(SELECT * FROM Transaction WHERE status = 'Delivery')union (SELECT * FROM Transaction WHERE Total_Amount>100)	5 row(s) returned	0.000 sec / 0.000 sec
10	01:42:48	SELECT * FROM Customer WHERE city = 'kandy' INTERSECT SELECT * FROM Customer WHERE name='ewal'	1 row(s) returned	0.000 sec / 0.000 sec

Object Info Session 10 01:42:48 1:42 AM 4/7/2024

Query Completed

MySQL Workbench

Local instance MySQL80 x unconnected x unconnected x

File Edit View Query Database Server Tools Scripting Help

Navigator: employees SQL File 3\* SQL File 4\* SQL File 5\* SQL File 6\* x order\_product product employee transaction supplier\_info branches transaction customer

Schemas: Filter objects

bakery\_system Tables: branches customer delivery delivery\_product employee order\_product products supplier\_info take\_away transaction views stored Procedures Functions dbmsprocedures fcc\_fei\_23 Tables Views Administration Schemas Information

```

365
366    -- 9) intersection operations
367    SELECT * FROM Customer WHERE city = 'Kandy'
368    INTERSECT
369    SELECT * FROM Customer WHERE name='ewal'
370
371    SELECT * FROM product WHERE Price_of_One_Item >= 100
372    INTERSECT
373    SELECT * FROM product WHERE Stock_Quantity >= 50
374
375
376

```

Result Grid | Filter Rows | Export | Wrap Cell Content: 13

Product_ID	Stock_Quantity	Name	Price_of_One_Item
P003	50	FishBun	100

Form Editor Field Types Query Stats Execution Plan

Table: manager

Columns:

- Manager\_ID varchar(25) PK
- Manager\_Name varchar(25)

Action Output

#	Time	Action	Message	Duration / Fetch
6	01:42:12	SELECT * FROM Employee WHERE Employee_Name LIKE '%an%' LIMIT 0,500	3 row(s) returned	0.000 sec / 0.000 sec
7	01:42:18	SELECT * FROM Customer WHERE Name LIKE 'n%' LIMIT 0,500	2 row(s) returned	0.000 sec / 0.000 sec
8	01:42:29	(SELECT * FROM Employee WHERE Position = 'Delivery boy')union (SELECT * FROM Employee WHERE salary>50000)	4 row(s) returned	0.000 sec / 0.000 sec
9	01:42:36	(SELECT * FROM Transaction WHERE status = 'Delivery')union (SELECT * FROM Transaction WHERE Total_Amount>100)	5 row(s) returned	0.000 sec / 0.000 sec
10	01:42:48	SELECT * FROM Customer WHERE city = 'kandy' INTERSECT SELECT * FROM Customer WHERE name='ewal'	1 row(s) returned	0.000 sec / 0.000 sec
11	01:42:55	SELECT * FROM product WHERE Price_of_One_Item >= 100 INTERSECT SELECT * FROM product WHERE Stock_Quantity >= 50	1 row(s) returned	0.000 sec / 0.000 sec

Object Info Session 11 01:42:55 1:42 AM 4/7/2024

Query Completed

## Set difference operation

MySQL Workbench

Local instance MySQL80 x unconnected x unconnected x

File Edit View Query Database Server Tools Scripting Help

Navigator: employee SQL File 3\* SQL File 4\* SQL File 5\* SQL File 6\* order\_product product employee transaction supplier\_info branches transaction customer

SCHEMAS: Filter objects

bakery\_system Tables branches customer delivery delivery\_product employee order\_product products supplier\_info take\_away transaction Views Stored Procedures Functions Triggers Triggers Views Administration Schemas Information

Table: manager

Columns:

- Manager\_ID** varchar(25) PK
- Manager\_Name varchar(25)

Result 47 x

Output

Action Output

#	Time	Action	Message	Duration / Fetch
7	01:42:18	SELECT * FROM Customer WHERE Name LIKE '%a%' LIMIT 0, 500	2 rows(s) returned	0.000 sec / 0.000 sec
8	01:42:29	(SELECT * FROM Employee WHERE Position = 'Delivery')UNION (SELECT * FROM Employee WHERE salary>50000)	4 rows(s) returned	0.000 sec / 0.000 sec
9	01:42:36	(SELECT * FROM Transaction WHERE status = 'Delivery')UNION (SELECT * FROM Transaction WHERE Total_Amount>100)	5 rows(s) returned	0.000 sec / 0.000 sec
10	01:42:48	SELECT * FROM Customer WHERE city = 'kandy' INTERSECT SELECT * FROM Customer WHERE name='amal'	1 row(s) returned	0.000 sec / 0.000 sec
11	01:42:55	SELECT * FROM product WHERE Price_of_One_Item > 100 INTERSECT SELECT * FROM product WHERE Stock_Quantity >= 50	1 row(s) returned	0.000 sec / 0.000 sec
12	01:43:09	(SELECT * FROM Employee WHERE Position = 'chef') EXCEPT (SELECT * FROM Employee WHERE Branches_ID>8002)	2 rows(s) returned	0.000 sec / 0.000 sec

Object Info Session Query Completed

1:43 AM 4/7/2024

MySQL Workbench

Local instance MySQL80 x unconnected x unconnected x

File Edit View Query Database Server Tools Scripting Help

Navigator: employee SQL File 3\* SQL File 4\* SQL File 5\* SQL File 6\* order\_product product employee transaction supplier\_info branches transaction customer

SCHEMAS: Filter objects

bakery\_system Tables branches customer delivery delivery\_product employee order\_product products supplier\_info take\_away transaction Views Stored Procedures Functions Triggers Triggers Views Administration Schemas Information

Table: manager

Columns:

- Manager\_ID** varchar(25) PK
- Manager\_Name varchar(25)

Result 48 x

Output

Action Output

#	Time	Action	Message	Duration / Fetch
8	01:42:29	(SELECT * FROM Employee WHERE Position = 'Delivery')UNION (SELECT * FROM Employee WHERE salary>50000)	4 rows(s) returned	0.000 sec / 0.000 sec
9	01:42:36	(SELECT * FROM Transaction WHERE status = 'Delivery')UNION (SELECT * FROM Transaction WHERE Total_Amount>100)	5 rows(s) returned	0.000 sec / 0.000 sec
10	01:42:48	SELECT * FROM Customer WHERE city = 'kandy' INTERSECT SELECT * FROM Customer WHERE name='amal'	1 row(s) returned	0.000 sec / 0.000 sec
11	01:42:55	SELECT * FROM product WHERE Price_of_One_Item > 100 INTERSECT SELECT * FROM product WHERE Stock_Quantity >= 50	1 row(s) returned	0.000 sec / 0.000 sec
12	01:43:09	(SELECT * FROM Employee WHERE Position = 'chef') EXCEPT (SELECT * FROM Employee WHERE Branches_ID>8002)	2 rows(s) returned	0.000 sec / 0.000 sec
13	01:43:13	(SELECT * FROM Transaction WHERE Status = 'Delivery') EXCEPT (SELECT * FROM Transaction WHERE Total_Amount>100)	2 rows(s) returned	0.000 sec / 0.000 sec

Object Info Session Query Completed

1:43 AM 4/7/2024

## Division operation

```

MySQL Workbench
File Edit View Query Database Server Tools Scripting Help
Navigator employee SQL File 3* SQL File 4* SQL File 5* SQL File 6* order_product product employee transaction supplier_info branches transaction customer
SCHEMAS
Schemas
Filter objects
bakeries_system
Tables
branches
customer
delivery
deliver_product
employee
manager
order_product
product
supplier_info
take_away
transaction
Views
Stored Procedures
Functions
dmlproc
For
fox_23
Tables
Views
Administration Schemas
Information
Table: manager
Columns:
Manager_ID varchar(25)
PK
Manager_Name varchar(25)

Result 49:
Output
# Time Action
1 01:42:36 (SELECT * FROM Transaction WHERE status = 'Delivery') union (SELECT * FROM Transaction WHERE Total_Amounts > 100) 5row(s) returned
0.000 sec / 0.000 sec
2 01:42:40 SELECT * FROM Customer WHERE city = 'kandy' INTERSECT SELECT * FROM Customer WHERE name='amali' 1row(s) returned
0.000 sec / 0.000 sec
3 01:42:55 SELECT * FROM product WHERE Price_of_One_Item >= 100 INTERSECT SELECT * FROM product WHERE Stock_Quantity >= 50 1row(s) returned
0.000 sec / 0.000 sec
4 01:43:09 (SELECT * FROM Employee WHERE Position = 'Chef') EXCEPT (SELECT * FROM Employee WHERE Branches_ID=8002) 2row(s) returned
0.000 sec / 0.000 sec
5 01:43:13 (SELECT * FROM Transaction WHERE Status = 'Delivery') EXCEPT (SELECT * FROM Transaction WHERE Total_Amount > 100) 2row(s) returned
0.000 sec / 0.000 sec
6 01:43:27 SELECT C.Name FROM Customer C WHERE NOT EXISTS ( SELECT P.Product_ID FROM Product P EXCEPT SELECT OP.Product_ID ) 0row(s) returned
0.000 sec / 0.000 sec
Object Info Session
Query Completed

```

## Inner join operation

```

MySQL Workbench
File Edit View Query Database Server Tools Scripting Help
Navigator employee SQL File 3* SQL File 4* SQL File 5* SQL File 6* order_product product employee transaction supplier_info branches transaction customer
SCHEMAS
Schemas
Filter objects
bakeries_system
Tables
branches
customer
delivery
deliver_product
employee
manager
order_product
product
supplier_info
take_away
transaction
Views
Stored Procedures
Functions
dmlproc
For
fox_23
Tables
Views
Administration Schemas
Information
Table: manager
Columns:
Manager_ID varchar(25)
PK
Manager_Name varchar(25)

Result 50:
Output
# Time Action
1 01:42:48 SELECT * FROM Customer WHERE city = 'kandy' INTERSECT SELECT * FROM Customer WHERE name='amali' 1row(s) returned
0.000 sec / 0.000 sec
2 01:42:55 SELECT * FROM product WHERE Price_of_One_Item >= 100 INTERSECT SELECT * FROM product WHERE Stock_Quantity >= 50 1row(s) returned
0.000 sec / 0.000 sec
3 01:43:09 (SELECT * FROM Employee WHERE Position = 'Chef') EXCEPT (SELECT * FROM Employee WHERE Branches_ID=8002) 2row(s) returned
0.000 sec / 0.000 sec
4 01:43:13 (SELECT * FROM Transaction WHERE Status = 'Delivery') EXCEPT (SELECT * FROM Transaction WHERE Total_Amount > 100) 2row(s) returned
0.000 sec / 0.000 sec
5 01:43:27 SELECT C.Name FROM Customer C WHERE NOT EXISTS ( SELECT P.Product_ID FROM Product P EXCEPT SELECT OP.Product_ID ) 0row(s) returned
0.000 sec / 0.000 sec
6 01:43:43 SELECT * FROM branches AS B INNER JOIN manager AS M ON B.Manager_ID = M.Manager_ID LIMIT 0, 500 7row(s) returned
0.000 sec / 0.000 sec
Object Info Session
Query Completed

```

## Natural join operation

The screenshot shows the MySQL Workbench interface with a query editor window. The SQL tab contains the following code:

```
465 -- 13) natural join operations
466 • SELECT * FROM branches natural JOIN manager;
467
468
469
```

The Result Grid shows the joined data from the branches and manager tables:

Manager_ID	Branch_ID	Location	Contact_Info	Number_of_Employees	Manager_Name
B001	B001	London	0702345678	5	Sue
B002	B002	CALIF. JUNCTION	0702345674	7	Suri
B003	B003	WAKHESLA	0702345689	3	Neha
B004	B004	BATU NANTUJA	0702345673	2	Smith
B005	B005	WITERAMA	0715555522	5	Dheeri
B006	B006	KALISANA	073244522	3	Wesan
B007	B007	HAPUGALA	070553542	4	Akashni

The Query Results window shows the execution history:

#	Time	Action	Message	Duration / Pack
11	01:43:55	SELECT * FROM product WHERE Price_of_One_Item >= 100 INTERSECT SELECT * FROM product WHERE Stock_Quantity >= 50	1 row(s) returned	0.000 sec / 0.000 sec
12	01:43:09	(SELECT * FROM Employee WHERE Position = 'chef') EXCEPT (SELECT * FROM Employee WHERE Branches_ID=B002)	2 row(s) returned	0.000 sec / 0.000 sec
13	01:43:13	(SELECT * FROM Transaction WHERE Status = 'Delivery') EXCEPT (SELECT * FROM Transaction WHERE Total_Amount>100)	2 row(s) returned	0.000 sec / 0.000 sec
14	01:43:27	SELECT C.Name FROM Customer C WHERE NOT EXISTS (SELECT P.Product_ID FROM Product P EXCEPT SELECT P.Product_ID FROM Customer C)	0 row(s) returned	0.000 sec / 0.000 sec
15	01:43:43	SELECT * FROM branches AS B INNER JOIN manager AS M ON B.Manager_ID = M.Manager_ID LIMIT 0,500	7 row(s) returned	0.000 sec / 0.000 sec
16	01:43:50	SELECT * FROM branches natural JOIN manager LIMIT 0,500	7 row(s) returned	0.000 sec / 0.000 sec

## Left outer join operation

The screenshot shows the MySQL Workbench interface with a query editor window. The SQL tab contains the following code:

```
468
469
470 -- 14) left outer join operations
471 • SELECT * FROM PRODUCT AS P LEFT OUTER JOIN order_product AS O ON o.Product_ID = P.Product_ID;
```

The Result Grid shows the joined data from the product and order\_product tables:

Product_ID	Stock_Quantity	Name	Price_of_One_Item	Order_ID	Product_ID
P001	90	Egg bun	80	W001	P001
P001	90	Egg bun	90	W005	P001
P002	40	Chicken bun	120	W003	P002
P003	10	Beef bun	100	W002	P003
P003	50	Fish bun	100	W004	P003
P003	50	Fish bun	100	W006	P003
P004	50	Jem bun	60	W007	P004
P005	46	Cake	120	W002	P005
P006	73	Dried	62	W008	P005
P007	80	Gato	90	W001	P007

The Query Results window shows the execution history:

#	Time	Action	Message	Duration / Pack
12	01:43:09	(SELECT * FROM Employee WHERE Position = 'chef') EXCEPT (SELECT * FROM Employee WHERE Branches_ID=B002)	2 row(s) returned	0.000 sec / 0.000 sec
13	01:43:13	(SELECT * FROM Transaction WHERE Status = 'Delivery') EXCEPT (SELECT * FROM Transaction WHERE Total_Amount>100)	2 row(s) returned	0.000 sec / 0.000 sec
14	01:43:27	SELECT C.Name FROM Customer C WHERE NOT EXISTS (SELECT P.Product_ID FROM Product P EXCEPT SELECT P.Product_ID FROM Customer C)	0 row(s) returned	0.000 sec / 0.000 sec
15	01:43:43	SELECT * FROM branches AS B INNER JOIN manager AS M ON B.Manager_ID = M.Manager_ID LIMIT 0,500	7 row(s) returned	0.000 sec / 0.000 sec
16	01:43:50	SELECT * FROM branches natural JOIN manager LIMIT 0,500	7 row(s) returned	0.000 sec / 0.000 sec
17	01:43:56	SELECT * FROM PRODUCT AS P LEFT OUTER JOIN order_product AS O ON o.Product_ID = P.Product_ID LIMIT 0,500	10 row(s) returned	0.016 sec / 0.000 sec

## Right outer join operation

The screenshot shows the MySQL Workbench interface with the following details:

- File Bar:** File, Edit, View, Query, Database, Server, Tools, Scripting, Help.
- Schemas:** Local instance MySQL80, unconnected, unconnected.
- Tables:** employees, SQL File 3\*, SQL File 4\*, SQL File 5\*, SQL File 6\*, order\_product, product, employee, transaction, supplier\_info, branches, transaction, customer.
- Code Editor:** SQL File 6\* contains the query: `-- 15) Right_outer join operations`  
`SELECT * FROM PRODUCT AS P right OUTER JOIN order_product AS O ON o.Product_ID = P.Product_ID;`
- Result Grid:** Shows the results of the query, listing various products with their details.
- Action Output:** Displays the execution log with 10 rows returned.
- System Bar:** Shows the date and time as 4/7/2024 1:44 AM.

## Full outer join operation

The screenshot shows the MySQL Workbench interface with the following details:

- File Bar:** File, Edit, View, Query, Database, Server, Tools, Scripting, Help.
- Schemas:** Local instance MySQL80, unconnected, unconnected.
- Tables:** employees, SQL File 3\*, SQL File 4\*, SQL File 5\*, SQL File 6\*, order\_product, product, employee, transaction, supplier\_info, branches, transaction, customer.
- Code Editor:** SQL File 6\* contains the query: `-- 16) full outer join operations`  
`(SELECT * FROM PRODUCT AS P LEFT OUTER JOIN order_product AS O ON o.Product_ID = P.Product_ID)`  
`UNION`  
`(SELECT * FROM PRODUCT AS P right OUTER JOIN order_product AS O ON o.Product_ID = P.Product_ID);`
- Result Grid:** Shows the results of the full outer join query.
- Action Output:** Displays the execution log with 10 rows returned.
- System Bar:** Shows the date and time as 4/7/2024 1:44 AM.

## Outer union relational algebraic operation by using user views

MySQL Workbench

Local instance MySQL80 unconnected unconnected

File Edit View Query Database Server Tools Scripting Help

Schemas: Filter objects

bakery\_system Tables: branches customer delivery delivery\_product employee manager order\_product supplier\_info take\_away views Stored Procedures Functions dbmsprocedures Triggers fnc\_25 Tables Views Administration Schemas Information

```

424 -- 17) outer union relational algebraic operations by using user views
425 CREATE VIEW customer_view AS
426 SELECT Customer_ID, Name, City
427 FROM Customer;
428
429 * select * from customer_view;

```

Result Grid | Filter Rows | Export | Write Cell Contents | 15

Customer_ID	Name	City
A001	Nishan	Kandy
A002	Kamal	Katupathota
A003	Arun	Pereadewa
A004	Nim	Pendendya
A005	Amal	
A006	Amal	Katupathota
A007	Uma	Kandy

Table: manager

Columns:

- Manager\_ID varchar(25) PK
- Manager\_Name varchar(25)

Object Info Session Query Completed

customer\_view\_ss

Object

Action	Time	Action	Message	Duration / Fetch
19	01:44:17	SELECT * FROM PRODUCT AS P LEFT OUTER JOIN order_product AS OP ON P.Product_ID = OP.Product_ID union (SELECT * FROM PRODUCT AS P RIGHT OUTER JOIN order_product AS OP ON P.Product_ID = OP.Product_ID)	10 row(s) returned	0.000 sec / 0.000 sec
20	01:44:22	CREATE VIEW customer_view AS SELECT Customer_ID, Name, City FROM Customer	Error Code: 1050. Table 'customer_view' already exists	0.000 sec
21	01:44:47	drop VIEW customer_view	0 row(s) affected	0.016 sec
22	01:44:52	CREATE VIEW customer_view AS SELECT Customer_ID, Name, City FROM Customer	0 row(s) affected	0.000 sec
23	01:45:05	select customer_view LIMIT 0, 500	Error Code: 1054. Unknown column 'customer_view' in field list	0.000 sec
24	01:45:16	select * from customer_view LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec

1:45 AM 4/7/2024

MySQL Workbench

Local instance MySQL80 unconnected unconnected

File Edit View Query Database Server Tools Scripting Help

Schemas: Filter objects

bakery\_system Tables: branches customer delivery delivery\_product employee manager order\_product supplier\_info take\_away views Stored Procedures Functions dbmsprocedures Triggers fnc\_25 Tables Views Administration Schemas Information

```

423
424 -- 17) outer union relational algebraic operations by using user views
425 CREATE VIEW customer_view AS
426 SELECT Customer_ID, Name, City
427 FROM Customer;
428
429
430 * CREATE VIEW delivery_view AS
431 SELECT Delivery_ID, Name, Contact_Info
432 FROM Delivery;
433
434
435 * (select* from customer_view)
436 UNION
437 (select * from delivery_view);
438

```

Result Grid | Filter Rows | Export | Write Cell Contents | 15

Customer_ID	Name	City
A001	Nishan	Kandy
A002	Kamal	Katupathota
A003	Arun	Pereadewa
A004	Nim	Pendendya
A005	Amal	Kandy
A006	Amal	Katupathota
A007	Uma	Kandy
D001	SUNGITH	0732456789
D002	Keral	0735591234
D003	Amal	0702386794
D004	Suri	0701255889
D005	Amith	0709255472
D006	Sunith	0705498932
D007	Keral	0774345451

Table: manager

Columns:

- Manager\_ID varchar(25) PK
- Manager\_Name varchar(25)

Object Info Session Query Completed

customer\_view\_ss

Object

Action	Time	Action	Message	Duration / Fetch
20	01:44:22	CREATE VIEW customer_view AS SELECT Customer_ID, Name, City FROM Customer	Error Code: 1050. Table 'customer_view' already exists	0.000 sec
21	01:44:47	drop VIEW customer_view	0 row(s) affected	0.016 sec
22	01:44:52	CREATE VIEW customer_view AS SELECT Customer_ID, Name, City FROM Customer	0 row(s) affected	0.000 sec
23	01:45:05	select customer_view LIMIT 0, 500	Error Code: 1054. Unknown column 'customer_view' in field list	0.000 sec
24	01:45:16	select * from customer_view LIMIT 0, 500	7row(s) returned	0.000 sec / 0.000 sec
25	01:45:41	(select* from customer_view)UNION (select * from delivery_view)	14row(s) returned	0.000 sec / 0.000 sec

1:45 AM 4/7/2024

## Nested queries 01

The screenshot shows the MySQL Workbench interface with a query editor window. The code being run is:

```
-- 10) nested queries!
SELECT Name
FROM Customer
WHERE Customer_ID IN (
    SELECT Customer_ID
    FROM Transaction T
    INNER JOIN Order_Product OP ON T.Order_ID = OP.Order_ID
    INNER JOIN Product P ON OP.Product_ID = P.Product_ID
    WHERE P.Stock_Quantity > 50
);
```

The results show a single row with the name 'ANAL'.

Below the query editor, the 'Output' tab displays the execution log:

#	Time	Action	Message	Duration / Fetch
21	01:44:47	drop VIEW customer_view	0 rows affected	0.016 sec
22	01:44:52	CREATE VIEW customer_view AS SELECT Customer_ID, Name, City FROM Customer	0 rows affected	0.000 sec
23	01:45:05	select customer_view LIMIT 0,500	Error Code: 1054. Unknown column 'customer_view' in 'field list'	0.000 sec
24	01:45:16	select * from customer_view LIMIT 0,500	7 rows returned	0.000 sec / 0.000 sec
25	01:45:41	(select * from customer_view)UNION select *from delivery_view	14 rows returned	0.000 sec / 0.000 sec
26	01:46:04	SELECT Name FROM Customer WHERE Customer_ID IN ( SELECT DISTINCT T.Customer_ID FROM Transaction T INNER JOIN Order_Prod... )	2 rows returned	0.000 sec / 0.000 sec
27	01:46:15	SELECT Name FROM Customer WHERE Customer_ID IN ( SELECT Customer_ID FROM Transaction WHERE Order_Date >= '2024-10-05' )	3 rows returned	0.000 sec / 0.000 sec

## Nested queries 02

The screenshot shows the MySQL Workbench interface with a query editor window. The code being run is:

```
-- 19) nested queries!
SELECT Name
FROM Customer
WHERE Customer_ID IN (
    SELECT Customer_ID
    FROM Transaction
    WHERE Order_Date >= '2024-10-05'
);
```

The results show a single row with the name 'ANAL'.

Below the query editor, the 'Output' tab displays the execution log:

#	Time	Action	Message	Duration / Fetch
22	01:44:52	CREATE VIEW customer_view AS SELECT Customer_ID, Name, City FROM Customer	0 rows affected	0.000 sec
23	01:45:05	select customer_view LIMIT 0,500	Error Code: 1054. Unknown column 'customer_view' in 'field list'	0.000 sec
24	01:45:16	select * from customer_view LIMIT 0,500	7 rows returned	0.000 sec / 0.000 sec
25	01:45:41	(select * from customer_view)UNION select *from delivery_view	14 rows returned	0.000 sec / 0.000 sec
26	01:46:04	SELECT Name FROM Customer WHERE Customer_ID IN ( SELECT DISTINCT T.Customer_ID FROM Transaction T INNER JOIN Order_Prod... )	2 rows returned	0.000 sec / 0.000 sec
27	01:46:15	SELECT Name FROM Customer WHERE Customer_ID IN ( SELECT Customer_ID FROM Transaction WHERE Order_Date >= '2024-10-05' )	3 rows returned	0.000 sec / 0.000 sec

## Nested queries 03

The screenshot shows the MySQL Workbench interface with the following details:

- SQL File 6\*** tab is active, displaying the following nested query code:

```
463
464      -- 20) nested queries3
465  SELECT Name
466  FROM Customer
467  WHERE Customer_ID IN (
468      SELECT DISTINCT T.Customer_ID
469      FROM Transaction T
470      INNER JOIN Order_Product OP ON T.Order_ID = OP.Order_ID
471      INNER JOIN Product P ON OP.Product_ID = P.Product_ID
472      WHERE P.Product_ID IN (
473          SELECT DISTINCT DP.Product_ID
474          FROM Delivery_Product DP
475      )
476  );
477 );
```

- Tables** pane shows the **bakery\_system** schema with tables: branches, customer, delivery, delivery\_product, employee, manager, order\_product, product, transaction, supplier\_info, branches, transaction, customer.
- Information** pane shows the **Table: manager** with columns: Manager\_ID (PK, varchar(25)) and Manager\_Name (varchar(25)).
- Customer 99** tab shows the execution history of the query:

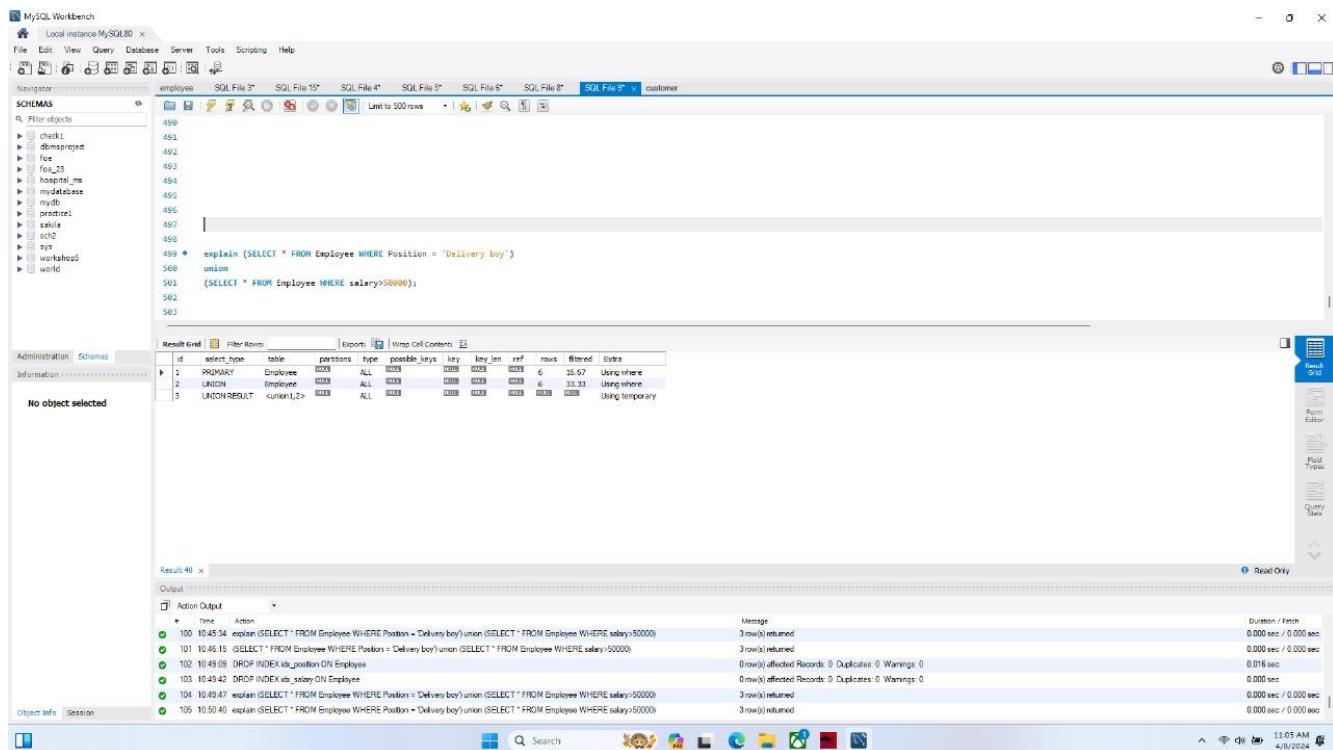
Order	Action	Message	Duration / Fetch
23	01:45:05	Action	0.000 sec / 0.000 sec
24	01:45:16	select * from customer_view LIMIT 0, 500	Error Code: 1054: Unknown column 'customer_view' in 'field list' 7row(s) returned 0.000 sec / 0.000 sec
25	01:49:41	(select * from customer_view) UNION (select * from delivery_view)	14row(s) returned 0.000 sec / 0.000 sec
26	01:48:04	SELECT Name FROM Customer WHERE Customer_ID IN ( (select * from customer_view) UNION (select * from delivery_view) )	2row(s) returned 0.000 sec / 0.000 sec
27	01:46:15	SELECT Name FROM Customer WHERE Customer_ID IN ( (select * from customer_view) UNION (select * from delivery_view) )	3row(s) returned 0.000 sec / 0.000 sec
28	01:46:20	SELECT Name FROM Customer WHERE Customer_ID IN ( (select * from customer_view) UNION (select * from delivery_view) )	6row(s) returned 0.000 sec / 0.000 sec

- System tray at the bottom right shows the date and time: 1:48 AM 4/7/2024.

# Chapter 6

## Tuning Union

### Before tuning



The screenshot shows the MySQL Workbench interface with the 'employee' schema selected. In the SQL editor, the following query is shown:

```
explain (SELECT * FROM Employee WHERE Position = 'Delivery boy')
union
(SELECT * FROM Employee WHERE salary>50000);
```

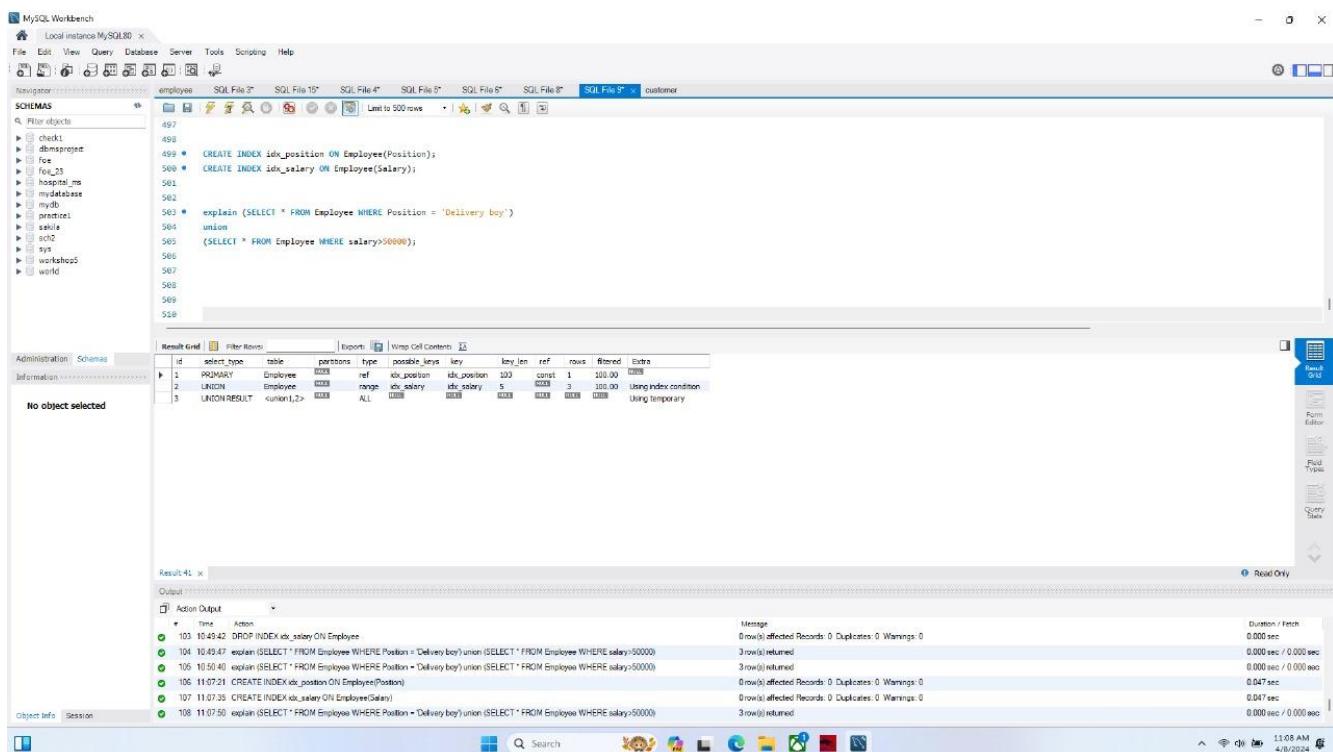
The Explain plan results table is displayed below the query:

ID	select_type	table	partitions	type	possible_keys	key	key_len	ref	rows	filtered	Extra
1	SIMPLE	Employee	ALL	ALL	ALL	ALL	ALL	ALL	6	26.67	Using where
2	UNION	Employee	ALL	ALL	ALL	ALL	ALL	ALL	6	33.33	Using where
3	UNION RESULT	cursor1,2	ALL	ALL	ALL	ALL	ALL	ALL	6	100.00	Using temporary

The Result Grid shows the execution details:

Time	Action	Message	Duration / Fetch	
100	10:45:34	explain (SELECT * FROM Employee WHERE Position = 'Delivery boy') union (SELECT * FROM Employee WHERE salary>50000)	3 rows() returned	0.000 sec / 0.000 sec
101	10:46:15	(SELECT * FROM Employee WHERE Position = 'Delivery boy') union (SELECT * FROM Employee WHERE salary>50000)	3 rows() returned	0.000 sec / 0.000 sec
102	10:49:09	DROP INDEX idx_position ON Employee	0 rows() affected Records: 0 Duplicates: 0 Warnings: 0	0.016 sec
103	10:49:42	DROP INDEX idx_salary ON Employee	0 rows() affected Records: 0 Duplicates: 0 Warnings: 0	0.000 sec
104	10:49:47	explain (SELECT * FROM Employee WHERE Position = 'Delivery boy') union (SELECT * FROM Employee WHERE salary>50000)	3 rows() returned	0.000 sec / 0.000 sec
105	10:50:40	(SELECT * FROM Employee WHERE Position = 'Delivery boy') union (SELECT * FROM Employee WHERE salary>50000)	3 rows() returned	0.000 sec / 0.000 sec

### After tuning



The screenshot shows the MySQL Workbench interface with the 'employee' schema selected. The same query is run:

```
CREATE INDEX idx_position ON Employee(Position);
CREATE INDEX idx_salary ON Employee(Salary);

explain (SELECT * FROM Employee WHERE Position = 'Delivery boy')
union
(SELECT * FROM Employee WHERE salary>50000);
```

The Explain plan results table is displayed:

ID	select_type	table	partitions	type	possible_keys	key	key_len	ref	rows	filtered	Extra
1	PRIMARY	Employee	ALL	ref	idx_position	idx_position	103	const	1	100.00	
2	UNION	Employee	ALL	range	idx_salary	idx_salary	5	const	3	100.00	Using index condition
3	UNION RESULT	cursor1,2	ALL	ALL	ALL	ALL	ALL	ALL	6	100.00	Using temporary

The Result Grid shows the execution details:

Time	Action	Message	Duration / Fetch	
103	10:49:42	DROP INDEX idx_salary ON Employee	0 rows() affected Records: 0 Duplicates: 0 Warnings: 0	0.000 sec
104	10:49:47	explain (SELECT * FROM Employee WHERE Position = 'Delivery boy') union (SELECT * FROM Employee WHERE salary>50000)	3 rows() returned	0.000 sec / 0.000 sec
105	10:50:40	(SELECT * FROM Employee WHERE Position = 'Delivery boy') union (SELECT * FROM Employee WHERE salary>50000)	3 rows() returned	0.000 sec / 0.000 sec
106	11:07:21	CREATE INDEX idx_position ON Employee(Position)	0 rows() affected Records: 0 Duplicates: 0 Warnings: 0	0.047 sec
107	11:07:35	CREATE INDEX idx_salary ON Employee(Salary)	0 rows() affected Records: 0 Duplicates: 0 Warnings: 0	0.047 sec
108	11:07:50	explain (SELECT * FROM Employee WHERE Position = 'Delivery boy') union (SELECT * FROM Employee WHERE salary>50000)	3 rows() returned	0.000 sec / 0.000 sec

## Intersection

Before tuning

The screenshot shows the MySQL Workbench interface with the 'employee' schema selected. In the SQL editor, the following query is entered:

```
explain (SELECT * FROM Transaction WHERE status = 'Delivery')  
union  
(SELECT * FROM Transaction WHERE Total_Amount>100);
```

The Result Grid shows the execution plan:

ID	Select_Type	Table	Partitions	Type	Possible_Keys	Key	Key_Len	Ref	Rows	Filtered	Extra
1	PRIMARY	Transaction	ALL	const	idx_status	idx_status	103	const	2	100.00	Using where
2	UNION	Transaction	ALL	const	idx_total_amount	idx_total_amount	103	const	5	33.33	Using where
3	UNION RESULT	<union1,2>	ALL	const							Using temporary

The Action Output pane shows the history of actions taken:

Time	Action	Message	Duration / Fetch
104 10:49:47	explain (SELECT * FROM Employee WHERE Position = 'Delivery') union (SELECT * FROM Employee WHERE salary>50000)	3 rows returned	0.00 sec / 0.00 sec
105 10:50:40	explain (SELECT * FROM Employee WHERE Position = 'Delivery') union (SELECT * FROM Employee WHERE salary>50000)	3 rows returned	0.00 sec / 0.00 sec
106 11:07:21	CREATE INDEX idx_position ON Employee(Position)	0 rows affected, 0 duplicates, 0 warnings, 0	0.047 sec
107 11:07:35	CREATE INDEX idx_salary ON Employee(Salary)	0 rows affected, 0 duplicates, 0 warnings, 0	0.047 sec
108 11:07:50	explain (SELECT * FROM Employee WHERE Position = 'Delivery') union (SELECT * FROM Employee WHERE salary>50000)	3 rows returned	0.00 sec / 0.00 sec
109 11:09:00	explain (SELECT * FROM Transaction WHERE status = 'Delivery') union (SELECT * FROM Transaction WHERE Total_Amount>100)	3 rows returned	0.016 sec / 0.00 sec

After tuning

The screenshot shows the MySQL Workbench interface with the 'employee' schema selected. In the SQL editor, the following query is entered:

```
CREATE INDEX idx_status ON Transaction(status);  
CREATE INDEX idx_total_amount ON Transaction(Total_Amount);  
  
explain (SELECT * FROM Transaction WHERE status = 'Delivery')  
union  
(SELECT * FROM Transaction WHERE Total_Amount>100);
```

The Result Grid shows the execution plan:

ID	Select_Type	Table	Partitions	Type	Possible_Keys	Key	Key_Len	Ref	Rows	Filtered	Extra
1	PRIMARY	Transaction	ALL	ref	idx_status	idx_status	103	const	2	100.00	
2	UNION	Transaction	ALL	const	idx_total_amount	idx_total_amount	103	const	5	33.33	Using where
3	UNION RESULT	<union1,2>	ALL	const							Using temporary

The Action Output pane shows the history of actions taken:

Time	Action	Message	Duration / Fetch
105 11:07:21	CREATE INDEX idx_position ON Employee(Position)	0 rows affected, 0 duplicates, 0 warnings, 0	0.047 sec
107 11:07:35	CREATE INDEX idx_salary ON Employee(Salary)	0 rows affected, 0 duplicates, 0 warnings, 0	0.047 sec
108 11:07:50	explain (SELECT * FROM Employee WHERE Position = 'Delivery') union (SELECT * FROM Employee WHERE salary>50000)	3 rows returned	0.00 sec / 0.00 sec
109 11:09:00	explain (SELECT * FROM Transaction WHERE status = 'Delivery') union (SELECT * FROM Transaction WHERE Total_Amount>100)	0 rows affected, 0 duplicates, 0 warnings, 0	0.016 sec / 0.00 sec
110 11:09:47	CREATE INDEX idx_status ON Transaction(status)	0 rows affected, 0 duplicates, 0 warnings, 0	0.047 sec
111 11:10:02	explain (SELECT * FROM Transaction WHERE status = 'Delivery') union (SELECT * FROM Transaction WHERE Total_Amount>100)	3 rows returned	0.00 sec / 0.00 sec

## Set difference

Before tuning

The screenshot shows the MySQL Workbench interface with the following details:

- File menu:** File, Edit, View, Query, Database, Server, Tools, Scripting, Help.
- Toolbar:** Standard MySQL icons.
- Schemas:** employee, SQL File 3\*, SQL File 15\*, SQL File 4\*, SQL File 5\*, SQL File 6\*, SQL File 8\*, SQL File 9\*, customer.
- Query Editor:** Contains the following SQL code:

```
explain SELECT * FROM Customer WHERE city = 'kandy'
INTERSECT
SELECT * FROM Customer WHERE name='amal';
```
- Result Grid:** Shows the execution plan with the following data:

ID	select_type	table	partitions	type	possible_keys	key	key_len	ref	rows	filtered	Extra
1	PRIMARY	Customer	ALL	ALL			100		6	16.67	Using where
2	INTERSECT	Customer	ALL	ALL			100		6	16.67	Using where
3	INTERSECT RESULT	<intersect1,2>	ALL	ALL			100		6	16.67	Using temporary
- Result Grid Output:** Shows the history of actions taken by the session, including index creation and dropping, and the execution of the query.
- System Bar:** Shows the Windows taskbar with various pinned icons.

After tuning

The screenshot shows the MySQL Workbench interface with the following details:

- File menu:** File, Edit, View, Query, Database, Server, Tools, Scripting, Help.
- Toolbar:** Standard MySQL icons.
- Schemas:** employee, SQL File 3\*, SQL File 10\*, SQL File 4\*, SQL File 5\*, SQL File 6\*, SQL File 8\*, SQL File 9\*, customer.
- Query Editor:** Contains the following SQL code:

```
DROP INDEX idx_total_amount ON Transaction;
explain SELECT * FROM Customer WHERE city = 'kandy'
INTERSECT
SELECT * FROM Customer WHERE name='amal';
```
- Result Grid:** Shows the execution plan with the following data:

ID	select_type	table	partitions	type	possible_keys	key	key_len	ref	rows	filtered	Extra
1	PRIMARY	Customer	ALL	ref	idx_city	idx_city	103	const	2	100.00	
2	INTERSECT	Customer	ALL	ref	idx_name	idx_name	203	const	2	100.00	
3	INTERSECT RESULT	<intersect1,2>	ALL	ALL			100		6	16.67	Using temporary
- Result Grid Output:** Shows the history of actions taken by the session, including index creation and dropping, and the execution of the query.
- System Bar:** Shows the Windows taskbar with various pinned icons.

## Division

### Before tuning

```

explain SELECT * FROM product WHERE Price_of_One_Item >= 100
INTERSECT
SELECT * FROM product WHERE Stock_Quantity >= 50;

```

The execution plan for the query is:

ID	select_type	table	partitions	base	possible_keys	key	key_len	ref	rows	filtered	Extra
1	PRIMARY	product		ALL					6	33.33	Using where
2	INTERSECT	product		ALL					6	33.33	Using where
3	INTERSECT RESULT	<intersect1,2>		ALL					6	33.33	Using temporary

Result Grid (1 row):

id	select_type	table	partitions	base	possible_keys	key	key_len	ref	rows	filtered	Extra
3	INTERSECT RESULT	<intersect1,2>		ALL					6	33.33	Using temporary

Action Output (12 rows):

Time	Action	Message	Duration / Fetch
11:22:47	DROP INDEX idx_c_name ON Customer	Error Code: 1064 You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'idx_c_name' at line 1	0.016 sec
11:23:03	DROP INDEX idx_c_name ON Customer	0 rows(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.016 sec
11:23:05	DROP INDEX idx_c_name ON Customer	0 rows(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.016 sec
11:23:19	DROP INDEX idx_position ON Employee	0 rows(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.016 sec
11:23:21	DROP INDEX idx_salary ON Employee	0 rows(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.016 sec
11:23:54	explain SELECT * FROM product WHERE Price_of_One_Item >= 100 INTERSECT SELECT * FROM product WHERE Stock_Quantity >= 50	3 rows(s) returned	0.000 sec / 0.000 sec

### After tuning

```

CREATE INDEX idx_price_quantity ON Product(Price_of_One_Item, Stock_Quantity);

explain SELECT * FROM product WHERE Price_of_One_Item >= 100
INTERSECT
SELECT * FROM product WHERE Stock_Quantity >= 50;

```

The execution plan for the query is:

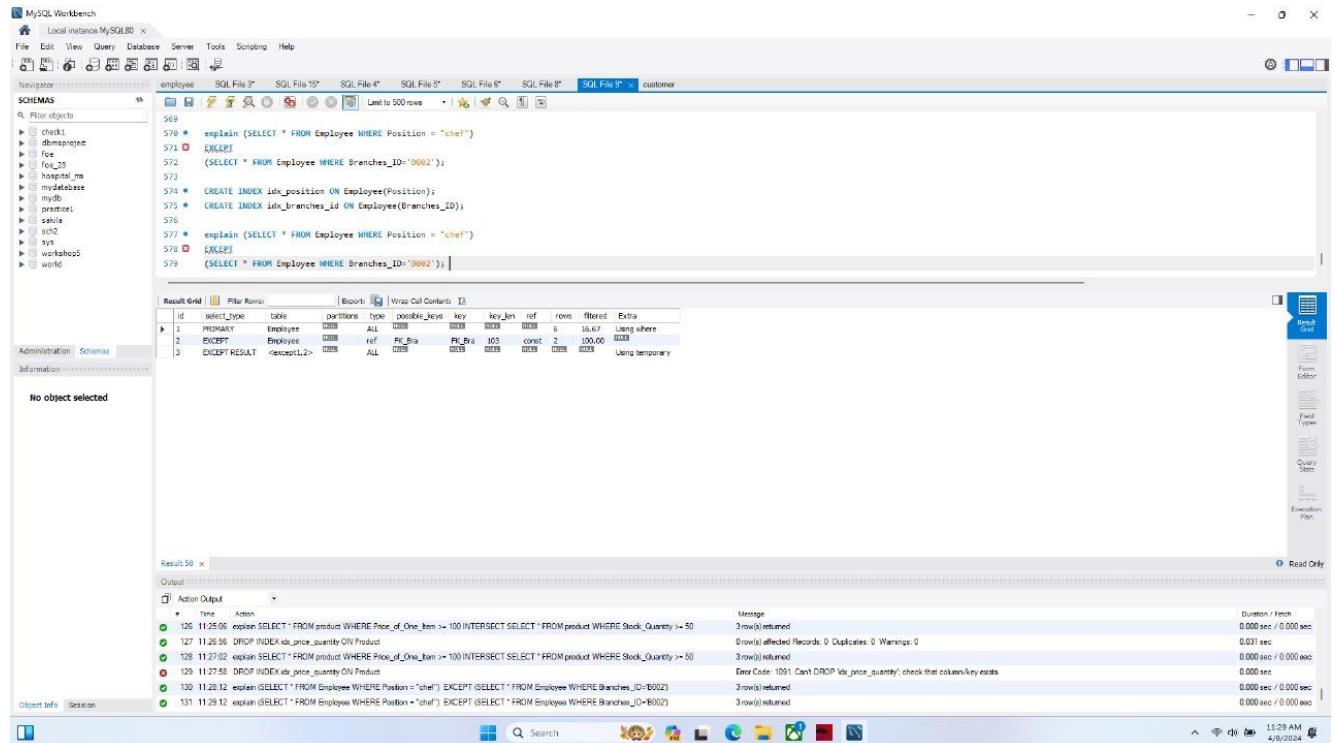
ID	select_type	table	partitions	base	possible_keys	key	key_len	ref	rows	filtered	Extra
1	PRIMARY	product		ALL	idx_price_quantity	idx_price_quantity	5		2	100.00	Using index condition
2	INTERSECT	product		ALL	idx_price_quantity	idx_price_quantity	5		6	33.33	Using where
3	INTERSECT RESULT	<intersect1,2>		ALL	idx_price_quantity	idx_price_quantity	5		6	33.33	Using temporary

Action Output (12 rows):

Time	Action	Message	Duration / Fetch
11:23:06	DROP INDEX idx_c_name ON Customer	0 rows(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.016 sec
11:23:19	DROP INDEX idx_position ON Employee	0 rows(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.016 sec
11:23:21	DROP INDEX idx_salary ON Employee	0 rows(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.016 sec
11:23:54	explain SELECT * FROM product WHERE Price_of_One_Item >= 100 INTERSECT SELECT * FROM product WHERE Stock_Quantity >= 50	3 rows(s) returned	0.000 sec / 0.000 sec
11:24:54	CREATE INDEX idx_price_quantity ON Product(Price_of_One_Item, Stock_Quantity)	0 rows(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.062 sec
11:25:06	explain SELECT * FROM product WHERE Price_of_One_Item >= 100 INTERSECT SELECT * FROM product WHERE Stock_Quantity >= 50	3 rows(s) returned	0.000 sec / 0.000 sec

## Inner join

### Before tuning



The screenshot shows the MySQL Workbench interface with the 'employee' schema selected. In the SQL pane, several queries are run:

```
569
570 * explain (SELECT * FROM Employee WHERE Position = 'chef')
571 EXPLAIN
572 (SELECT * FROM Employee WHERE Branches_ID=10002);
573
574 * CREATE INDEX idx_position ON Employee(Position);
575 * CREATE INDEX idx_branches_id ON Employee(Branches_ID);
576
577 * explain (SELECT * FROM Employee WHERE Position = 'chef')
578 EXPLAIN
579 (SELECT * FROM Employee WHERE Branches_ID=10002);
```

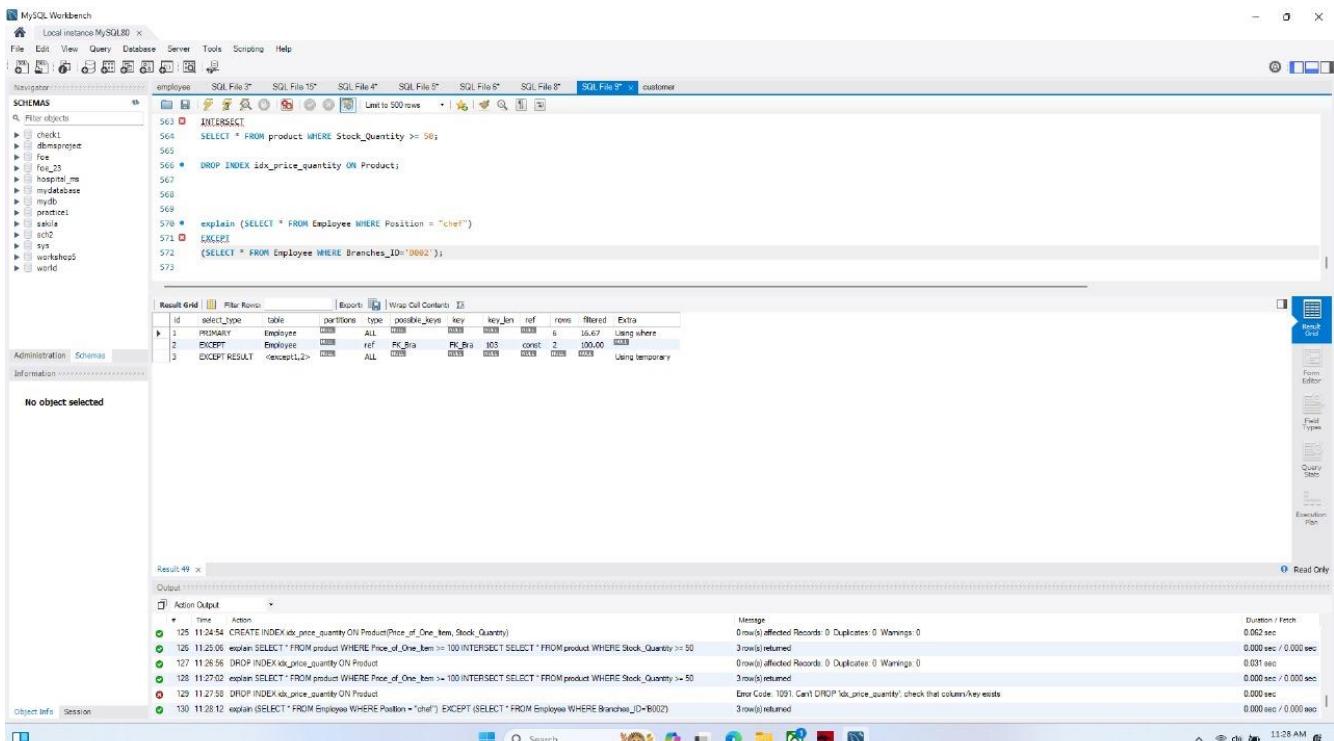
The Result Grid shows the execution plan for the first query:

ID	select_type	table	partitions	type	possible_keys	key	key_len	ref	rows	filtered	Extra
1	PRIMARY	Employee	ALL	ALL	ALL	ALL	ALL	ALL	6	16.67	Using where
2	EXCEPT	Employee	ALL	ref	PK_Bra	PK_Bra	103	const	2	100.00	
3	EXCEPT RESULT	<except1,2>	ALL	ALL	ALL	ALL	ALL	ALL	3	100.00	Using temporary

The Output pane shows the results of the tuning process:

- 129 11:25:05 explain SELECT \* FROM product WHERE Price\_of\_One\_Item >= 100 INTERSECT SELECT \* FROM product WHERE Stock\_Quantity >= 50
- 127 11:26:56 DROP INDEX idx\_price\_quantity ON Product
- 128 11:27:02 explain SELECT \* FROM product WHERE Price\_of\_One\_Item >= 100 INTERSECT SELECT \* FROM product WHERE Stock\_Quantity >= 50
- 129 11:27:58 DROP INDEX idx\_price\_quantity ON Product
- 130 11:28:12 explain (SELECT \* FROM Employee WHERE Position = 'chef') EXCEPT (SELECT \* FROM Employee WHERE Branches\_ID=10002)
- 131 11:29:12 explain (SELECT \* FROM Employee WHERE Position = 'chef') EXCEPT (SELECT \* FROM Employee WHERE Branches\_ID=10002)

### After tuning



The screenshot shows the MySQL Workbench interface with the 'employee' schema selected. In the SQL pane, the tuning process is shown:

```
563 * INTERSECT
564     SELECT * FROM product WHERE Stock_Quantity >= 50;
565
566 * DROP INDEX idx_price_quantity ON Product;
567
568 * explain (SELECT * FROM Employee WHERE Position = 'chef')
571 EXPLAIN
572 (SELECT * FROM Employee WHERE Branches_ID=10002);
573
```

The Result Grid shows the execution plan for the first query after tuning:

ID	select_type	table	partitions	type	possible_keys	key	key_len	ref	rows	filtered	Extra
1	PRIMARY	Employee	ALL	ALL	ALL	ALL	ALL	ALL	6	16.67	Using where
2	EXCEPT	Employee	ALL	ref	PK_Bra	PK_Bra	103	const	2	100.00	
3	EXCEPT RESULT	<except1,2>	ALL	ALL	ALL	ALL	ALL	ALL	3	100.00	Using temporary

The Output pane shows the results of the tuning process:

- 129 11:24:54 CREATE INDEX idx\_price\_quantity ON Product(Price\_of\_One\_Item, Stock\_Quantity)
- 126 11:25:05 explain SELECT \* FROM product WHERE Price\_of\_One\_Item >= 100 INTERSECT SELECT \* FROM product WHERE Stock\_Quantity >= 50
- 127 11:26:56 DROP INDEX idx\_price\_quantity ON Product
- 128 11:27:02 explain SELECT \* FROM product WHERE Price\_of\_One\_Item >= 100 INTERSECT SELECT \* FROM product WHERE Stock\_Quantity >= 50
- 129 11:27:58 DROP INDEX idx\_price\_quantity ON Product
- 130 11:28:12 explain (SELECT \* FROM Employee WHERE Position = 'chef') EXCEPT (SELECT \* FROM Employee WHERE Branches\_ID=10002)
- 131 11:29:12 explain (SELECT \* FROM Employee WHERE Position = 'chef') EXCEPT (SELECT \* FROM Employee WHERE Branches\_ID=10002)

## Natural join

### Before tuning

The screenshot shows the MySQL Workbench interface with the 'Schemas' tab selected. In the center, there is a SQL editor window containing the following code:

```

585
586 • explain (SELECT * FROM Transaction WHERE Status = "Delivery")
587 □ EXPLAIN
588 (SELECT * FROM Transaction WHERE Total_Amount>100);
589
590 • CREATE INDEX idx_status ON Transaction(Status);
591 • CREATE INDEX idx_total_amount ON Transaction(Total_Amount);
592
593 • explain (SELECT * FROM Transaction WHERE Status = "Delivery")
594 □ EXPLAIN
595 (SELECT * FROM Transaction WHERE Total_Amount>100);
596

```

Below the code is a Result Grid table showing the execution plan:

ID	select_type	table	partitions	type	possible_keys	key	key_len	ref	rows	filtered	Extra
1	PRIMARY	Transaction		ref	idx_status	idx_status	103	const	2	100.00	Using temporary
2	EXCEPT	Transaction		range	idx_total_amount	idx_total_amount	5	const	1	100.00	Using index condition
3	EXCEPT RESULT	<except1,2>		ALL	none	none	none	none	1	100.00	Using temporary

At the bottom of the screen, the Taskbar shows the date and time as 11:33 AM 4/8/2024.

### After tuning

The screenshot shows the MySQL Workbench interface with the 'Schemas' tab selected. In the center, there is a SQL editor window containing the following code:

```

578 □ EXPLAIN
579 (SELECT * FROM Employee WHERE Branches_ID=0002);
580
581 • DROP INDEX idx_position ON Employees;
582 • DROP INDEX idx_branches_id ON Employees;
583
584
585 • explain (SELECT * FROM Transaction WHERE Status = "Delivery")
586 □ EXPLAIN
587 (SELECT * FROM Transaction WHERE Total_Amount>100);
588

```

Below the code is a Result Grid table showing the execution plan:

ID	select_type	table	partitions	type	possible_keys	key	key_len	ref	rows	filtered	Extra
1	PRIMARY	Transactions		ALL	none	none	5	ref	26.00	Using where	
2	EXCEPT	Transaction		ALL	none	none	5	ref	33.33	Using where	
3	EXCEPT RESULT	<except1,2>		ALL	none	none	none	none	1	100.00	Using temporary

At the bottom of the screen, the Taskbar shows the date and time as 11:33 AM 4/8/2024.

## Left outer join

Before tuning

The screenshot shows the MySQL Workbench interface with the following details:

- Execution Plan:** The explain output for the query is displayed, showing the following execution steps:
  - Step 1: PRIMARY C (Customer) - Using temporary tablespace.
  - Step 2: UNCACHEABLE SUBQUERY P (Product) - Using index tablespace.
  - Step 3: DEPENDENT EXCEPT T (Transaction) - Using temporary tablespace.
  - Step 4: EXCEPT RESULT (except<2,3>) - Using temporary tablespace.
- Result Grid:** The result grid shows 6 rows returned.
- Output Log:** The log shows the following actions:
  - 138 11:32:59 CREATE INDEX idx\_total\_amount ON Transaction(Total\_Amount)
  - 139 11:33:00 explain SELECT \* FROM Transaction WHERE Status = "Delivery" EXCEPT (SELECT \* FROM Transaction WHERE Total\_Amount <= 100)
  - 140 11:33:44 DROP INDEX idx\_status ON Transaction
  - 141 11:33:47 DROP INDEX idx\_total\_amount ON Transaction
  - 142 11:34:37 SELECT C.Name FROM Customer C WHERE NOT EXISTS ( SELECT P.Product\_ID FROM Product P EXCEPT SELECT P.Product\_ID FROM Product P EXCEPT SELECT P.Product\_ID FROM Product P )
  - 143 11:34:53 explain SELECT C.Name FROM Customer C WHERE NOT EXISTS ( SELECT P.Product\_ID FROM Product P EXCEPT SELECT P.Product\_ID FROM Product P )

After tuning

The screenshot shows the MySQL Workbench interface with the following details:

- Execution Plan:** The explain output for the query is displayed, showing the following execution steps:
  - Step 1: PRIMARY C (Customer) - Using temporary tablespace.
  - Step 2: UNCACHEABLE SUBQUERY P (Product) - Using index tablespace.
  - Step 3: DEPENDENT EXCEPT T (Transaction) - Using temporary tablespace.
  - Step 4: EXCEPT RESULT (except<2,3>) - Using temporary tablespace.
- Result Grid:** The result grid shows 6 rows returned.
- Output Log:** The log shows the following actions:
  - 143 11:34:53 explain SELECT C.Name FROM Customer C WHERE NOT EXISTS ( SELECT P.Product\_ID FROM Product P EXCEPT SELECT P.Product\_ID FROM Product P )
  - 144 11:36:05 CREATE INDEX idx\_product\_id\_product ON Product(Product\_ID)
  - 145 11:36:09 CREATE INDEX idx\_order\_id\_order\_product ON Order\_Product(Order\_ID)
  - 146 11:36:11 CREATE INDEX idx\_customer\_id ON Transaction(Customer\_ID)
  - 147 11:36:14 CREATE INDEX idx\_customer\_id ON Transaction(Customer\_ID)
  - 148 11:36:25 explain SELECT C.Name FROM Customer C WHERE NOT EXISTS ( SELECT P.Product\_ID FROM Product P EXCEPT SELECT P.Product\_ID FROM Product P )

## Outer union

Before tuning

MySQL Workbench - Local instance MySQL80

Schemas: employee, SQL File 3\*, SQL File 15\*, SQL File 4\*, SQL File 5\*, SQL File 6\*, SQL File 8\*, SQL File 9\* customer

Result Grid:

ID	Select Type	Table	Partitions	Type	Possible Keys	Key	Key_len	Ref	Rows	Filtered	Extra
1	SIMPLE	B	NULL	ALL	PK_Mng	PRIMARY	102	bakery_system.B.Manger_ID	1	100.00	Using where

Output:

```
150 11:37:09 DROP INDEX idx_product_id_order_product ON Order_Product
151 11:37:11 DROP INDEX idx_order_id ON `Transaction`
152 11:37:13 DROP INDEX idx_customer_id ON `Transaction`
153 11:37:25 DROP INDEX idx_product_id_order_product ON Order_Product
154 11:37:27 DROP INDEX idx_customer_id ON `Transaction`
155 11:39:02 explain SELECT * FROM branches AS B INNER JOIN manager AS M ON B.Manger_ID = M.Manger_ID
156 11:39:02 CREATE INDEX idx_manger_id ON branches(Manger_ID)
```

After tuning

MySQL Workbench - Local instance MySQL80

Schemas: employee, SQL File 3\*, SQL File 15\*, SQL File 4\*, SQL File 5\*, SQL File 6\*, SQL File 8\*, SQL File 9\* customer

Result Grid:

ID	Select Type	Table	Partitions	Type	Possible Keys	Key	Key_len	Ref	Rows	Filtered	Extra
1	SIMPLE	M	NULL	ALL	idx_manger_id	PRIMARY	102	bakery_system.B.Manger_ID	1	100.00	Using where

Output:

```
152 11:37:13 DROP INDEX idx_customer_id ON `Transaction`
153 11:37:20 DROP INDEX idx_product_id_order_product ON Order_Product
154 11:37:25 DROP INDEX idx_customer_id ON `Transaction`
155 11:39:02 explain SELECT * FROM branches AS B INNER JOIN manager AS M ON B.Manger_ID = M.Manger_ID
156 11:39:02 CREATE INDEX idx_manger_id ON branches(Manger_ID)
157 11:39:43 explain SELECT * FROM branches AS B INNER JOIN manager AS M ON B.Manger_ID = M.Manger_ID
```

## Nested query 02

Before tuning

The screenshot shows the MySQL Workbench interface with the following details:

- Schemas:** employee, SQL File 3\*, SQL File 15\*, SQL File 4\*, SQL File 5\*, SQL File 6\*, SQL File 8\*, SQL File 9\*, customer
- SQL Editor:** Contains several explain statements and a CREATE INDEX statement for 'idx\_product\_id\_order\_product'.
- Result Grid:** Shows the execution plan for the first query, including a ref index 'idx\_product\_id\_order\_product' with a key length of 103.
- Output Tab:** Displays the history of queries with their execution times and error messages. One error message is visible: "Error Code: 1553. Cannot drop index 'idx\_manager\_id' needed in a foreign key constraint".

After tuning

The screenshot shows the MySQL Workbench interface after tuning, with the following details:

- Schemas:** employee, SQL File 3\*, SQL File 15\*, SQL File 4\*, SQL File 5\*, SQL File 6\*, SQL File 8\*, SQL File 9\*, customer
- SQL Editor:** Contains the same set of queries as the 'Before tuning' state.
- Output Tab:** Displays the history of queries with their execution times. All queries now execute successfully without errors, such as the one related to dropping the 'idx\_manager\_id' index.

## Nested query 03

Before tuning

```

MySQL Workbench - Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help
File Edit View Query Database Server Tools Scripting Help
Navigator: employee SQL File 3* SQL File 15* SQL File 4* SQL File 5* SQL File 6* SQL File 8* SQL File 9* customer
Schemas
Filter objects
employee
customer
dbmsproject
dev
fca_28
hospital_ms
mydatabase
public
prestrel
seale
sch2
sys
workshop5
world
No object selected

Result Grid | Filter Rows | Export | Wrap Cell Contents | 
id select_type table partitions type possible_keys key key_len ref rows filtered Extra
1 PRIMARY P ALL ref idx_product_id_order_product idx_product_id_order_product 103 bakery_system.P.Product_ID 1 100.00
2 UNION O ALL ref idx_product_id_order_product idx_product_id_order_product 103 bakery_system.O.Product_ID 5 100.00
3 UNION RESULT <union1,2> ALL ref PRIMARY idx_product_id_order_product 103 bakery_system.O.Product_ID 5 100.00 Using temporary

Administration | Schemas | Information
Information
Output
Action Output
Time Action
161 11:41:30 CREATE INDEX idx_product_id_order_product ON order_product(Product_ID)
162 11:42:00 DROP INDEX idx_product_id_order_product ON order_product
163 11:42:22 explain SELECT * FROM PRODUCT AS P LEFT OUTER JOIN order_product AS O ON o.Product_ID = P.Product_ID
164 11:42:51 DROP INDEX idx_product_id_order_product ON order_product
165 11:42:55 DROP INDEX idx_product_id_order_product ON order_product
166 11:43:58 explain (SELECT * FROM PRODUCT AS P LEFT OUTER JOIN order_product AS O ON o.Product_ID = P.Product_ID) union (SELECT * FROM PROD...
Object Info Session

```

After tuning

```

MySQL Workbench - Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help
File Edit View Query Database Server Tools Scripting Help
Navigator: employee SQL File 3* SQL File 15* SQL File 4* SQL File 5* SQL File 6* SQL File 8* SQL File 9* customer
Schemas
Filter objects
employee
customer
dbmsproject
dev
fca_28
hospital_ms
mydatabase
public
prestrel
seale
sch2
sys
workshop5
world
No object selected

Result Grid | Filter Rows | Export | Wrap Cell Contents | 
id select_type table partitions type possible_keys key key_len ref rows filtered Extra
1 PRIMARY P ALL ref idx_product_id_order_product idx_product_id_order_product 103 bakery_system.P.Product_ID 1 100.00
2 PRIMARY O ALL ref idx_product_id_order_product idx_product_id_order_product 103 bakery_system.O.Product_ID 5 100.00
3 UNION P ALL eq_ref PRIMARY idx_product_id_order_product 103 bakery_system.O.Product_ID 2 100.00
4 UNION RESULT <union1,2> ALL ref PRIMARY idx_product_id_order_product 103 bakery_system.O.Product_ID 2 100.00 Using temporary

Administration | Schemas | Information
Information
Output
Action Output
Time Action
164 11:42:51 CREATE INDEX idx_product_id_order_product ON order_product
165 11:42:55 DROP INDEX idx_product_id_order_product ON order_product
166 11:43:58 explain (SELECT * FROM PRODUCT AS P LEFT OUTER JOIN order_product AS O ON o.Product_ID = P.Product_ID) union (SELECT * FROM PROD...
Object Info Session

```