BS-Information Technology
4th Semester

FOOD DELIVERY SYSTEM

CC-215 DATABASE SYSTEMS

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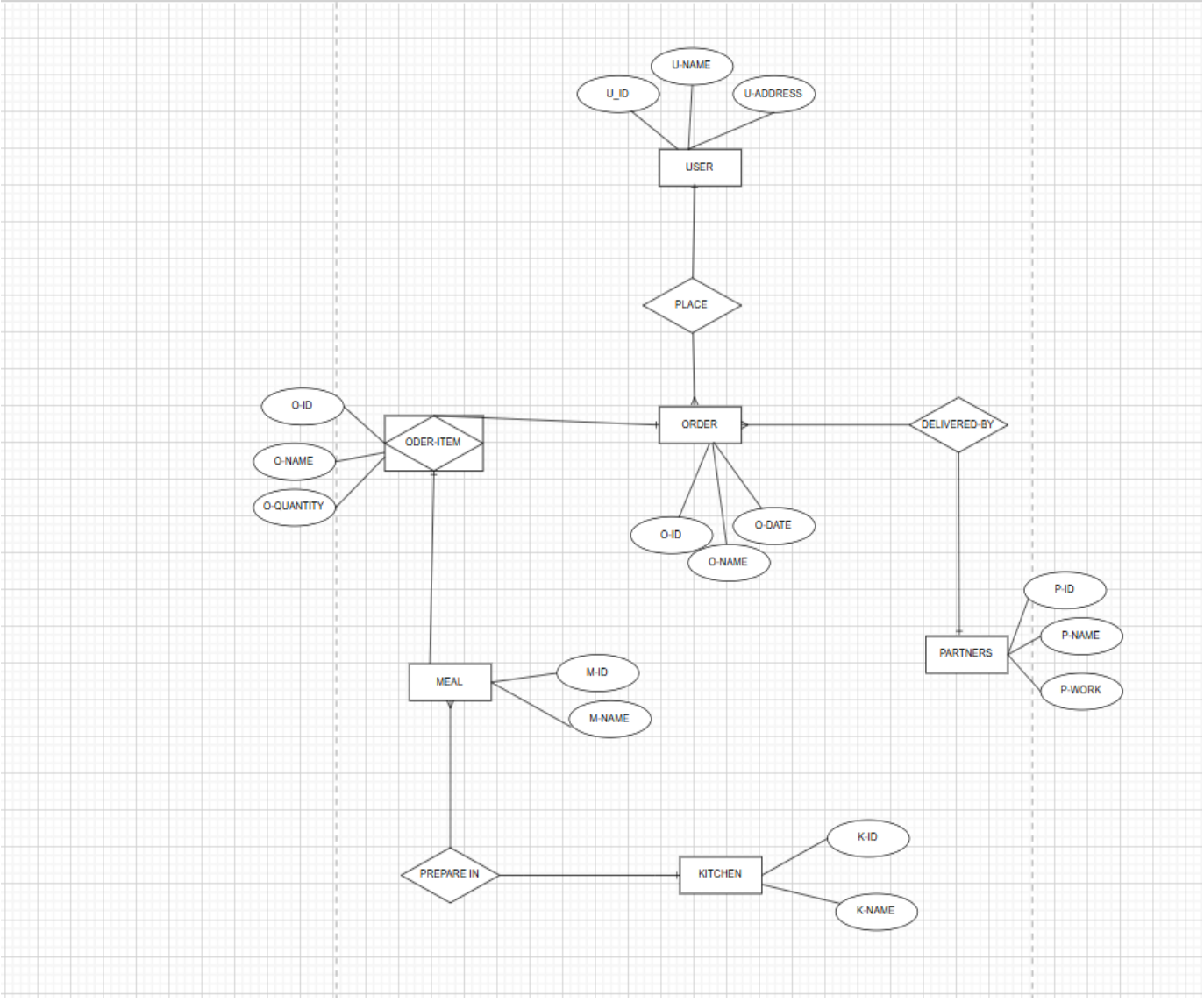
Entity Relationship Diagrams:

Chen Model:



Relational Schema / Table Schema:

→ **User** (User ID, Name, Address)
→ **Partners** (Partner_ID, Name, Work, penalties)
→ **Order** (Order ID, Date, u-id(F.K) ,p-id(F.K))
→ **OrderItem (**item_id , item_name**,** Order ID (F.K) , Quantity)
→ **Meal** (Meal ID, Name , Rating_score, complain_description , or_ID (F.K) , kit_ID (F.K))
→ **Kitchen** (Kitchen ID, Name)

Normalization:

All tables normalized except the Oder items.

Dependency: (Partial dependency)

Item-id----->Item-name

Item-id+Oder-id------>Quantity

→ *To resolve, create two tables from orderitem*

Item (Item-id, name)

orderItem (Item-id (F.K) , ord-id (F.K) , quantity)

Normalized Relational Schemas

→ **User** (User ID, Name, Address)
→ **Partners** (Partner_ID, Name, Work, penalties)
→ **Order** (Order ID, Date, u-id(F.K) ,p-id(F.K))
→ **Items** (item_id, name)
→ **OrderItem (**Order ID (F.K) , Item ID (F.K) , Quantity)
→ **Meal** (Meal ID, Name , Rating_score, complain_description , or_ID (F.K) , kit_ID (F.K))
→ **Kitchen** (Kitchen ID, Name)

USEFUL COMMANDS

→ Show databases

→ Create database

→ Use database

→ Show tables

→ Create tables

→ Describe table

→ Insert into

→ Update

→ Alter

→ Select

→ Arithmetic

→ Aggregrate

→ Logical

→ Relational

→ Distinct

→ Group by

→ Group by having

→ In

→ Like

→ Order by ASC and DESC

Commands for database

- **Show databases**

```
Enter password: **********
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 16
Server version: 8.0.42 MySQL Community Server - GPL

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| college            |
| information_schema |
| mysql              |
| performance_schema |
| sys                |
+--------------------+
5 rows in set (0.00 sec)
```

- **Create and Use database**

```
mysql> create database FOOD_DELIVERY;
Query OK, 1 row affected (0.01 sec)

mysql> use FOOD_DELIVERY;
Database changed
```

Commands for tables

1.User

→ **Create and describe**

```
mysql> create table user(user_id INT(5) PRIMARY KEY, user_name Varchar(25) NOT NULL, user_address Varchar(25) NOT NULL);
Query OK, 0 rows affected, 1 warning (0.03 sec)

mysql> DESCRIBE user;
+--------------+------------+------+-----+---------+-------+
| Field        | Type       | Null | Key | Default | Extra |
+--------------+------------+------+-----+---------+-------+
| user_id      | int        | NO   | PRI | NULL    |       |
| user_name    | varchar(25) | NO   |     | NULL    |       |
| user_address | varchar(25) | NO   |     | NULL    |       |
+--------------+------------+------+-----+---------+-------+
3 rows in set (0.00 sec)
```

→ **INSERT INTO**

```
mysql> INSERT INTO user Values('1','khadija','sheikhupura'),('2','amna','sheikhupura'),('3','zainab','');
Query OK, 3 rows affected (0.01 sec)
Records: 3  Duplicates: 0  Warnings: 0
```

→ **Update**

```
mysql> update user set user_address='sheikhupura' where user_id='3';
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

→ **Select ***

```
mysql> select * from user;
+---------+-----------+---------------+
| user_id | user_name | user_address  |
+---------+-----------+---------------+
|       1 | khadija   | sheikhupura   |
|       2 | amna      | sheikhupura   |
|       3 | zainab    | sheikhupura   |
+---------+-----------+---------------+
3 rows in set (0.00 sec)
```

→ Select 1 column

```
mysql> select user_id from user;
+----------+
| user_id  |
+----------+
|        1 |
|        2 |
|        3 |
+----------+
```

→ Select 1 column (target-value)

```
mysql> select user_name from user where user_id='2';
+-----------+
| user_name |
+-----------+
| amna      |
+-----------+
1 row in set (0.00 sec)
```

→ Select 2 columns (target-value)

```
mysql> select user_name, user_address from user where user_id='1';
+-----------+--------------+
| user_name | user_address |
+-----------+--------------+
| khadija   | sheikhupura  |
+-----------+--------------+
1 row in set (0.00 sec)
```

2.Partners

→ Create and describe

```
mysql> create table partners(partner_id INT(5) PRIMARY KEY, partner_name Varchar(25) NOT NULL, work Varchar(25), no_of_penalties INT(5));
Query OK, 0 rows affected, 2 warnings (0.03 sec)

mysql> DESCRIBE partners;
+---------------+------------+-----+-----+---------+-------+
| Field         | Type       | Null | Key | Default | Extra |
+---------------+------------+-----+-----+---------+-------+
| partner_id    | int        | NO  | PRI | NULL    |       |
| partner_name  | varchar(25) | NO  |     | NULL    |       |
| work          | varchar(25) | YES |     | NULL    |       |
| no_of_penalties | int      | YES |     | NULL    |       |
+---------------+------------+-----+-----+---------+-------+
4 rows in set (0.00 sec)
```

→ INSERT INTO

```
mysql> INSERT INTO partners Values(201,'sarab','packaging',1),(202,'abdul rehman','holding to rider',1),(203,'hamza','riding to destination',NULL);
Query OK, 3 rows affected (0.01 sec)
Records: 3  Duplicates: 0  Warnings: 0
```

→ Update

```
mysql> update partners set no_of_penalties='1' where partner_id='203';
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

→ Select *

```
mysql> select * from partners;
+------------+--------------+-----------------------+------------------+
| partner_id | partner_name | work                  | no_of_penalties |
+------------+--------------+-----------------------+------------------+
|        201 | sarab        | packaging             |                1 |
|        202 | abdul rehman | holding to rider      |                1 |
|        203 | hamza        | riding to destination |                1 |
+------------+--------------+-----------------------+------------------+
3 rows in set (0.00 sec)
```

→ Select 1 column

```
mysql> select partner_id from partners;
+---------------+
| partner_id |
+---------------+
|            201 |
|            202 |
|            203 |
+---------------+
3 rows in set (0.00 sec)
```

→ Select 1 column (target-value)

```
mysql> select partner_name from partners where partner_id='202';
+--------------+
| partner_name |
+--------------+
| abdul rehman |
+--------------+
1 row in set (0.00 sec)
```

→ Select 2 columns (target-value)

```
mysql> select partner_name, work from partners where partner_id='201';
+--------------+-----------+
| partner_name | work      |
+--------------+-----------+
| sarab        | packaging |
+--------------+-----------+
1 row in set (0.00 sec)
```

3.Orders

→ Create and describe

```
mysql> create table orders(order_id INT(5) PRIMARY KEY, order_date Varchar(25) NOT NULL);
Query OK, 0 rows affected, 1 warning (0.03 sec)

mysql> describe orders;
+------------+-------------+------+-----+---------+-------+
| Field      | Type        | Null | Key | Default | Extra |
+------------+-------------+------+-----+---------+-------+
| order_id   | int         | NO   | PRI | NULL    |       |
| order_date | varchar(25) | NO   |     | NULL    |       |
+------------+-------------+------+-----+---------+-------+
2 rows in set (0.00 sec)
```

→ Adding new columns

```
mysql> alter table orders Add p_id INT(5);
Query OK, 0 rows affected, 1 warning (0.08 sec)
Records: 0  Duplicates: 0  Warnings: 1

mysql> describe orders;
+-------------+-------------+------+-----+---------+-------+
| Field       | Type        | Null | Key | Default | Extra |
+-------------+-------------+------+-----+---------+-------+
| order_id    | int         | NO   | PRI | NULL    |       |
| order_date  | varchar(25) | NO   |     | NULL    |       |
| u_id        | int         | YES  | MUL | NULL    |       |
| p_id        | int         | YES  |     | NULL    |       |
+-------------+-------------+------+-----+---------+-------+
4 rows in set (0.00 sec)
```

```
mysql> alter table orders Add u_id INT(5);
Query OK, 0 rows affected, 1 warning (0.05 sec)
Records: 0  Duplicates: 0  Warnings: 1

mysql> describe orders;
+-------------+-------------+------+-----+---------+-------+
| Field       | Type        | Null | Key | Default | Extra |
+-------------+-------------+------+-----+---------+-------+
| order_id    | int         | NO   | PRI | NULL    |       |
| order_date  | varchar(25) | NO   |     | NULL    |       |
| u_id        | int         | YES  |     | NULL    |       |
+-------------+-------------+------+-----+---------+-------+
3 rows in set (0.00 sec)
```

→ making foreign keys

```
mysql> alter table orders Add constraint fk_const_name FOREIGN KEY (p_id) REFERENCES partners(partner_id);
Query OK, 0 rows affected (0.09 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> describe orders;
+------------+-------------+------+-----+---------+-------+
| Field      | Type        | Null | Key | Default | Extra |
+------------+-------------+------+-----+---------+-------+
| order_id   | int         | NO   | PRI | NULL    |       |
| order_date | varchar(25) | NO   |     | NULL    |       |
| u_id       | int         | YES  | MUL | NULL    |       |
| p_id       | int         | YES  | MUL | NULL    |       |
+------------+-------------+------+-----+---------+-------+
4 rows in set (0.00 sec)
```

```
mysql> alter table orders Add constraint fk_constraint_name FOREIGN KEY (u_id) REFERENCES user(user_id);
Query OK, 0 rows affected (0.15 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> describe orders;
+------------+-------------+------+-----+---------+-------+
| Field      | Type        | Null | Key | Default | Extra |
+------------+-------------+------+-----+---------+-------+
| order_id   | int         | NO   | PRI | NULL    |       |
| order_date | varchar(25) | NO   |     | NULL    |       |
| u_id       | int         | YES  | MUL | NULL    |       |
+------------+-------------+------+-----+---------+-------+
3 rows in set (0.00 sec)
```

→ INSERT INTO

```
mysql> INSERT INTO orders Values(101,'5th May','1',201),(102,'6th May','2',202),(103,'7th May','3',NULL);
Query OK, 3 rows affected (0.01 sec)
Records: 3  Duplicates: 0  Warnings: 0
```

→ Update

```
mysql> update orders set p_id='203' where order_id='103';
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

→ Select *

```
mysql> select * from orders;
+----------+-------------+------+------+
| order_id | order_date  | u_id | p_id |
+----------+-------------+------+------+
|      101 | 5th May     |    1 |  201 |
|      102 | 6th May     |    2 |  202 |
|      103 | 7th May     |    3 |  203 |
+----------+-------------+------+------+
3 rows in set (0.00 sec)
```

→ Select 1 column

```
mysql> select order_id from orders;
+----------+
| order_id |
+----------+
|      101 |
|      102 |
|      103 |
+----------+
3 rows in set (0.00 sec)
```

→ Select 1 column (target-value)

```
mysql> select order_date from orders where order_id='103';
+------------+
| order_date |
+------------+
| 7th May    |
+------------+
1 row in set (0.00 sec)
```

→ Select 2 columns (target-value)

```
mysql> select order_date, u_id from orders where order_id='101';
+------------+------+
| order_date | u_id |
+------------+------+
| 5th May    |    1 |
+------------+------+
1 row in set (0.00 sec)
```

4.Items

→ Create and describe

```
mysql> create table items(item_id INT(5) PRIMARY KEY, item_name Varchar(25) NOT NULL);
Query OK, 0 rows affected, 1 warning (0.03 sec)

mysql> describe items;
+-----------+-------------+------+-----+---------+-------+
| Field     | Type        | Null | Key | Default | Extra |
+-----------+-------------+------+-----+---------+-------+
| item_id   | int         | NO   | PRI | NULL    |       |
| item_name | varchar(25) | NO   |     | NULL    |       |
+-----------+-------------+------+-----+---------+-------+
2 rows in set (0.00 sec)
```

→ INSERT INTO

```
mysql> INSERT INTO items Values(301,'burger'),(302,'biryani'),(303,'');
Query OK, 3 rows affected (0.01 sec)
Records: 3  Duplicates: 0  Warnings: 0
```

→ Update

```
mysql> update items set item_name='nuggets' where item_id='303';
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

→ Select *

```
mysql> select * from items;
+-----------+-------------+
| item_id   | item_name   |
+-----------+-------------+
|       301 | burger      |
|       302 | biryani     |
|       303 | nuggets     |
+-----------+-------------+
3 rows in set (0.00 sec)
```

→ Select 1 column

```
mysql> select item_id from items;
+-----------+
| item_id   |
+-----------+
|       301 |
|       302 |
|       303 |
+-----------+
3 rows in set (0.00 sec)
```

→ Select 1 column (target-value)

```
mysql> select item_name from items where item_id='303';
+------------+
| item_name |
+------------+
| nuggets    |
+------------+
1 row in set (0.00 sec)
```

→ Select 2 columns (target-value)

```
mysql> select item_id,item_name from items where item_id='301';
+---------+-----------+
| item_id | item_name |
+---------+-----------+
|     301 | burger    |
+---------+-----------+
```

5.OrderItem

→ Create and describe

```
mysql> create table orderItem(quantity INT(10) NOT NULL);
Query OK, 0 rows affected, 1 warning (0.03 sec)

mysql> describe orderItem;
+----------+------+------+-----+---------+-------+
| Field    | Type | Null | Key | Default | Extra |
+----------+------+------+-----+---------+-------+
| quantity | int  | NO   |     | NULL    |       |
+----------+------+------+-----+---------+-------+
1 row in set (0.00 sec)
```

→ Adding new columns and making foreign keys

```
mysql> alter table orderItem Add it_id INT(5);
Query OK, 0 rows affected, 1 warning (0.06 sec)
Records: 0  Duplicates: 0  Warnings: 1

mysql> alter table orderItem Add constraint fk_constr_name FOREIGN KEY (it_id) REFERENCES item(item_id);
ERROR 1824 (HY000): Failed to open the referenced table 'item'
mysql> alter table orderItem Add constraint fk_constr_name FOREIGN KEY (it_id) REFERENCES items(item_id);
Query OK, 0 rows affected (0.09 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> describe orderItem;
+----------+------+------+-----+---------+-------+
| Field    | Type | Null | Key | Default | Extra |
+----------+------+------+-----+---------+-------+
| quantity | int  | NO   |     | NULL    |       |
| or_id    | int  | YES  | MUL | NULL    |       |
| it_id    | int  | YES  | MUL | NULL    |       |
+----------+------+------+-----+---------+-------+
3 rows in set (0.00 sec)
```

```
mysql> alter table orderItem Add or_id INT(5);
Query OK, 0 rows affected, 1 warning (0.05 sec)
Records: 0  Duplicates: 0  Warnings: 1

mysql> describe orderItem;
+----------+------+------+-----+---------+-------+
| Field    | Type | Null | Key | Default | Extra |
+----------+------+------+-----+---------+-------+
| quantity | int  | NO   |     | NULL    |       |
| or_id    | int  | YES  |     | NULL    |       |
+----------+------+------+-----+---------+-------+
2 rows in set (0.00 sec)

mysql> alter table orderItem Add constraint fk_cons_name FOREIGN KEY (or_id) REFERENCES orders(order_id);
Query OK, 0 rows affected (0.09 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> describe orderItem;
+----------+------+------+-----+---------+-------+
| Field    | Type | Null | Key | Default | Extra |
+----------+------+------+-----+---------+-------+
| quantity | int  | NO   |     | NULL    |       |
| or_id    | int  | YES  | MUL | NULL    |       |
+----------+------+------+-----+---------+-------+
2 rows in set (0.00 sec)
```

→ **INSERT INTO**

```
mysql> INSERT INTO orderItem Values('3','101','301'),('3','102','302'),('3','103',NULL);
Query OK, 3 rows affected (0.01 sec)
Records: 3  Duplicates: 0  Warnings: 0
```

→ **Update**

```
mysql> update orderItem set it_id='303' where or_id='103';
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

→ **Select ***

```
mysql> select * from orderItem;
+----------+-------+-------+
| quantity | or_id | it_id |
+----------+-------+-------+
|        3 |   101 |   301 |
|        3 |   102 |   302 |
|        3 |   103 |   303 |
+----------+-------+-------+
3 rows in set (0.00 sec)
```

→ **Select 1 column**

```
mysql> select it_id from orderItem;
+-------+
| it_id |
+-------+
|   301 |
|   302 |
|   303 |
+-------+
3 rows in set (0.00 sec)
```

→ Select 1 column (target-value)

```
mysql> select quantity from orderItem where it_id='302';
+----------+
| quantity |
+----------+
|        3 |
+----------+
1 row in set (0.00 sec)
```

→ Select 2 columns (target-value)

```
mysql> select quantity, or_id from orderItem where it_id='301';
+----------+-------+
| quantity | or_id |
+----------+-------+
|        3 |   101 |
+----------+-------+
1 row in set (0.00 sec)
```

6.Kitchen

→ Create and describe

```
mysql> create table kitchen(kitchen_id INT(5) PRIMARY KEY, kitchen_name Varchar(25) NOT NULL);
Query OK, 0 rows affected, 1 warning (0.04 sec)

mysql> describe kitchen;
+-------------+------------+------+-----+---------+-------+
| Field       | Type       | Null | Key | Default | Extra |
+-------------+------------+------+-----+---------+-------+
| kitchen_id   | int        | NO   | PRI | NULL    |       |
| kitchen_name | varchar(25) | NO   |     | NULL    |       |
+-------------+------------+------+-----+---------+-------+
2 rows in set (0.00 sec)
```

→ INSERT INTO

```
mysql> INSERT INTO kitchen Values(401,'rustam foods'),(402,'mehar baba'),(403,'');
Query OK, 3 rows affected (0.01 sec)
Records: 3  Duplicates: 0  Warnings: 0
```

→ Update

```
mysql> update kitchen set kitchen_name='food master' where kitchen_id='403';
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

→ Select *

```
mysql> select * from kitchen;
+--------------+-----------------+
| kitchen_id   | kitchen_name    |
+--------------+-----------------+
|          401 | rustam foods    |
|          402 | mehar baba      |
|          403 | food master     |
+--------------+-----------------+
3 rows in set (0.00 sec)
```

→ Select 1 column

```
mysql> select kitchen_name from kitchen;
+-----------------+
| kitchen_name    |
+-----------------+
| rustam foods    |
| mehar baba      |
| food master     |
+-----------------+
3 rows in set (0.00 sec)
```

→ Select 1 column (target-value)

```
mysql> select kitchen_name from kitchen where kitchen_id='403';
+--------------+
| kitchen_name |
+--------------+
| food master  |
+--------------+
1 row in set (0.00 sec)
```

→ Select 2 columns (target-value)

```
mysql> select kitchen_name, kitchen_id from kitchen where kitchen_id='401';
+--------------+------------+
| kitchen_name | kitchen_id |
+--------------+------------+
| rustam foods |        401 |
+--------------+------------+
1 row in set (0.00 sec)
```

7.Meal

→ Create , adding and describe

```
mysql>  create table meal(meal_id INT(5) PRIMARY KEY, meal_name Varchar(25) NOT NULL, rating_score INT(5), complain_description Varchar(25));
Query OK, 0 rows affected, 2 warnings (0.04 sec)

mysql> alter table meal Add ord_id INT(5);
Query OK, 0 rows affected, 1 warning (0.04 sec)
Records: 0  Duplicates: 0  Warnings: 1

mysql> alter table meal Add kit_id INT(5);
Query OK, 0 rows affected, 1 warning (0.05 sec)
Records: 0  Duplicates: 0  Warnings: 1

mysql> describe meal;
+---------------------+-------------+------+-----+---------+-------+
| Field               | Type        | Null | Key | Default | Extra |
+---------------------+-------------+------+-----+---------+-------+
| meal_id             | int         | NO   | PRI | NULL    |       |
| meal_name           | varchar(25) | NO   |     | NULL    |       |
| rating_score        | int         | YES  |     | NULL    |       |
| complain_description | varchar(25) | YES  |     | NULL    |       |
| ord_id              | int         | YES  |     | NULL    |       |
| kit_id              | int         | YES  |     | NULL    |       |
+---------------------+-------------+------+-----+---------+-------+
6 rows in set (0.00 sec)
```

→ Making foreign keys

```
mysql> alter table meal Add constraint fk_c_name FOREIGN KEY (ord_id) REFERENCES orders(order_id);
Query OK, 0 rows affected (0.09 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table meal Add constraint fk_cn_name FOREIGN KEY (kit_id) REFERENCES kitchen(kitchen_id);
Query OK, 0 rows affected (0.12 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> describe meal;
+---------------------+-------------+------+-----+---------+-------+
| Field               | Type        | Null | Key | Default | Extra |
+---------------------+-------------+------+-----+---------+-------+
| meal_id             | int         | NO   | PRI | NULL    |       |
| meal_name           | varchar(25) | NO   |     | NULL    |       |
| rating_score        | int         | YES  |     | NULL    |       |
| complain_description | varchar(25) | YES  |     | NULL    |       |
| ord_id              | int         | YES  | MUL | NULL    |       |
| kit_id              | int         | YES  | MUL | NULL    |       |
+---------------------+-------------+------+-----+---------+-------+
6 rows in set (0.00 sec)
```

→ INSERT INTO

```
mysql> INSERT INTO meal Values(501, 'super offer', '4', 'no complain', '101', '401'),(502, 'special party', '3', 'late delivery', '102', '402'),(503, 'night craving', '2', 'poor packaging', '103',
NULL);
Query OK, 3 rows affected (0.01 sec)
Records: 3  Duplicates: 0  Warnings: 0
```

→ Update

```
mysql> update meal set kit_id='403' where meal_id='503';
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

→ Select *

```
mysql> select * from meal;
+---------+--------------+--------------+----------------------+--------+--------+
| meal_id | meal_name    | rating_score | complain_description | ord_id | kit_id |
+---------+--------------+--------------+----------------------+--------+--------+
|     501 | super offer  |            4 | no complain          |    101 |    401 |
|     502 | special party |            3 | late delivery        |    102 |    402 |
|     503 | night craving |            2 | poor packaging       |    103 |    403 |
+---------+--------------+--------------+----------------------+--------+--------+
3 rows in set (0.00 sec)
```

→ Select 1 column

```
mysql> select meal_name from meal;
+--------------+
| meal_name    |
+--------------+
| super offer  |
| special party |
| night craving |
+--------------+
3 rows in set (0.00 sec)
```

→ Select 1 column (target-value)

```
mysql> select meal_name from meal where meal_id='503';
+----------------+
| meal_name      |
+----------------+
| night craving |
+----------------+
1 row in set (0.00 sec)
```

→ **Select 2 columns (target-value)**

```
mysql> select meal_name,rating_score from meal where meal_id='501';
+-------------+--------------+
| meal_name   | rating_score |
+-------------+--------------+
| super offer |            4 |
+-------------+--------------+
1 row in set (0.00 sec)
```

→ **As command**

```
mysql> select meal_name as food_name from meal;
+-----------------+
| food_name       |
+-----------------+
| super offer     |
| special party   |
| night craving   |
+-----------------+
3 rows in set (0.00 sec)
```

OTHER IMPORTANT QUERIES IN SELECT

→ Arithmetic

```
mysql> select no_of_penalties*5 as 5_times_penalties from partners;
+--------------------+
| 5_times_penalties  |
+--------------------+
|                  5 |
|                  5 |
|                 10 |
+--------------------+
3 rows in set (0.00 sec)
```

```
mysql> select no_of_penalties+1 as increment_in_penalties from partners where partner_id='202';
+------------------------+
| increment_in_penalties |
+------------------------+
|                      2 |
+------------------------+
1 row in set (0.00 sec)

mysql> select (no_of_penalties+1)*2 as change_in_penalties from partners;
+---------------------+
| change_in_penalties |
+---------------------+
|                   4 |
|                   4 |
|                   6 |
+---------------------+
3 rows in set (0.00 sec)
```

→ Distinct

```
mysql> select distinct no_of_penalties from partners;
+------------------+
| no_of_penalties  |
+------------------+
|                1 |
|                2 |
+------------------+
2 rows in set (0.00 sec)
```

→ Aggregrate

```
mysql> select AVG(no_of_penalties) as average_penalties from partners;
+------------------+
| average_penalties |
+------------------+
|           1.3333 |
+------------------+
1 row in set (0.00 sec)

mysql> select count(*) from partners;
+----------+
| count(*) |
+----------+
|        3 |
+----------+
1 row in set (0.00 sec)

mysql> select count(no_of_penalties) from partners;
+------------------------+
| count(no_of_penalties) |
+------------------------+
|                      3 |
+------------------------+
1 row in set (0.00 sec)

mysql> select MAX(no_of_penalties) as most_penalties from partners;
+---------------+
| most_penalties |
+---------------+
|             2 |
+---------------+
1 row in set (0.00 sec)

mysql> select SUM(no_of_penalties) as total_penalties from partners;
+----------------+
| total_penalties |
+----------------+
|              4 |
+----------------+
1 row in set (0.00 sec)
```

→ Logical

```
mysql> select partner_name from partners where no_of_penalties>=1 AND no_of_penalties<=2;
+--------------+
| partner_name |
+--------------+
| sarab        |
| abdul rehman |
| hamza        |
+--------------+
3 rows in set (0.00 sec)

mysql> select partner_name from partners where work='packaging' AND no_of_penalties between 0 AND 2;
+--------------+
| partner_name |
+--------------+
| sarab        |
+--------------+
1 row in set (0.00 sec)

mysql> select partner_name from partners where work='packaging' AND no_of_penalties between 1 AND 2;
+--------------+
| partner_name |
+--------------+
| sarab        |
+--------------+
1 row in set (0.00 sec)

mysql> select partner_name from partners where work='packaging' OR no_of_penalties between 2 AND 3;
+--------------+
| partner_name |
+--------------+
| sarab        |
| hamza        |
+--------------+
2 rows in set (0.00 sec)
```

→ Relational

```
mysql> select partner_name from partners where no_of_penalties>=1;
+--------------+
| partner_name |
+--------------+
| sarab        |
| abdul rehman |
| hamza        |
+--------------+
3 rows in set (0.00 sec)

mysql> select partner_name from partners where no_of_penalties!=1;
+--------------+
| partner_name |
+--------------+
| hamza        |
+--------------+
1 row in set (0.00 sec)
```

→ In

```
mysql> select partner_name from partners where no_of_penalties IN(2,3,4);
+--------------+
| partner_name |
+--------------+
| hamza        |
+--------------+
1 row in set (0.00 sec)
```

→ Order by ASC and DESC

```
mysql> select partner_name from partners order by no_of_penalties;
+--------------+
| partner_name |
+--------------+
| sarab        |
| abdul rehman |
| hamza        |
+--------------+

mysql> select partner_name from partners order by no_of_penalties DESC;
+--------------+
| partner_name |
+--------------+
| hamza        |
| sarab        |
| abdul rehman |
+--------------+
3 rows in set (0.00 sec)
```

→ Like

```
mysql> select partner_name from partners where partner_name like 'a%';
+--------------+
| partner_name |
+--------------+
| abdul rehman |
+--------------+
1 row in set (0.00 sec)

mysql> select partner_name from partners where partner_name like 'a%a';
Empty set (0.00 sec)

mysql> select partner_name from partners where partner_name like '%a';
+--------------+
| partner_name |
+--------------+
| hamza        |
+--------------+
1 row in set (0.00 sec)

mysql> select partner_name from partners where partner_name like '_a%a';
+--------------+
| partner_name |
+--------------+
| hamza        |
+--------------+
1 row in set (0.00 sec)
```

→ Group by

```
mysql> select AVG(no_of_penalties) as average_penalties from partners group by no_of_penalties;
+-------------------+
| average_penalties |
+-------------------+
|            1.0000 |
|            2.0000 |
+-------------------+
2 rows in set (0.00 sec)
```

→ Group by having

```
mysql> select AVG(no_of_penalties) as average_penalties from partners group by no_of_penalties having count(partner_name)='3';
Empty set (0.00 sec)

mysql> select AVG(no_of_penalties) as average_penalties from partners group by no_of_penalties having count(partner_name)='2';
+-------------------+
| average_penalties |
+-------------------+
|            1.0000 |
+-------------------+
1 row in set (0.00 sec)
```