RESTAURANT MANAGEMENT SYSTEM

1. Identification of Project related to DBMS project (project Title):

RESTAURANT MANAGEMENT SYSTEM

2. Project Background: Restaurant management systems are an essential tool for any restaurant owner, manager, or operator. This system helps to be more efficient and organized and improve customer service. A restaurant management system would be a one-stop solution to manage restaurant business. Restaurant is a kind of business that serves people all over the world with ready made food. With a restaurant management system, you can manage your business more efficiently, save time and money, and improve the experience of your customers.

3. Description of the Project: For this restaurant management system, we have used SQL to create the tables and insert values into it. The tables that are created are Chef, Food, Customer, Order, Food Order, Chef Order, Customer Contact, Restaurant Contact, Restaurant, Restaurant add (for restaurant address), Restaurant Customer, Bill, Waiter, Waiter customer. Using these tables, we can get information about the workers (chefs, waiters) of the restaurant and about customers and their orders, etc.

4. ER Diagram Creation (use any online tools to draw ER diagram):

Identification of entities:

- **Customer:** This is the main entity of this management system, designed for the customer's management.
- **Order:** This entity will help the customer in placing orders.
- **Chef:** This entity helps in preparing food items by chef placed in every order
- **Restaurant:** This entity will tell us the basic information about the restaurant. By knowing the basic information of the restaurant, customers will show their interest in visiting the restaurant.
- **Waiter:** This entity will help the customers in serving their foods.
- **Bill:** This entity will help the customers in preparing the bills of the customers.
- **Food:** This entity helps in maintaining the records of food item placed in an order

List of Entities and its Attributes:

- Customer (cus_id, cus_name, contact_no.)
- Order (ord_no, items_count, ord_time)
- Chef (chef_id, chef_name)
- Restaurant (r_id, r_name, contact_no., address) • Waiter (w_id, w_name)
- Bill (b_no., price)
- Food (food_no., price,description)

***Key attributes*:**

cus_id, ord_no., chef_id, r_id, w_id, b_no, food_no.

Entity relations and types of relation:

- **Customer – Restaurant:**

  Relation: Goes to

  Cardinality: M : M

- **Waiter – Customer:**

  Relation: Serves

  Cardinality: M: M

- **Customer – Order:**

  Relation: Places

  Cardinality: 1 : M

- **Customer – Bill:**

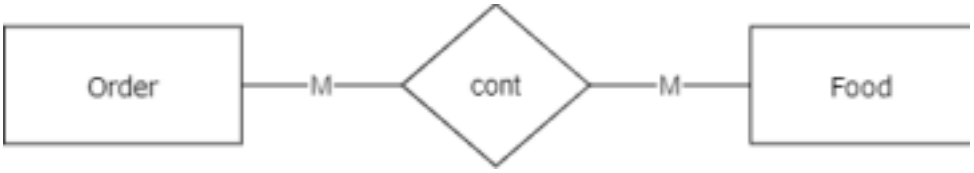
  Relation: Pays

  Cardinality: 1 : M

- **Order – Food:**

  Relation: Contains

  Cardinality: M : M

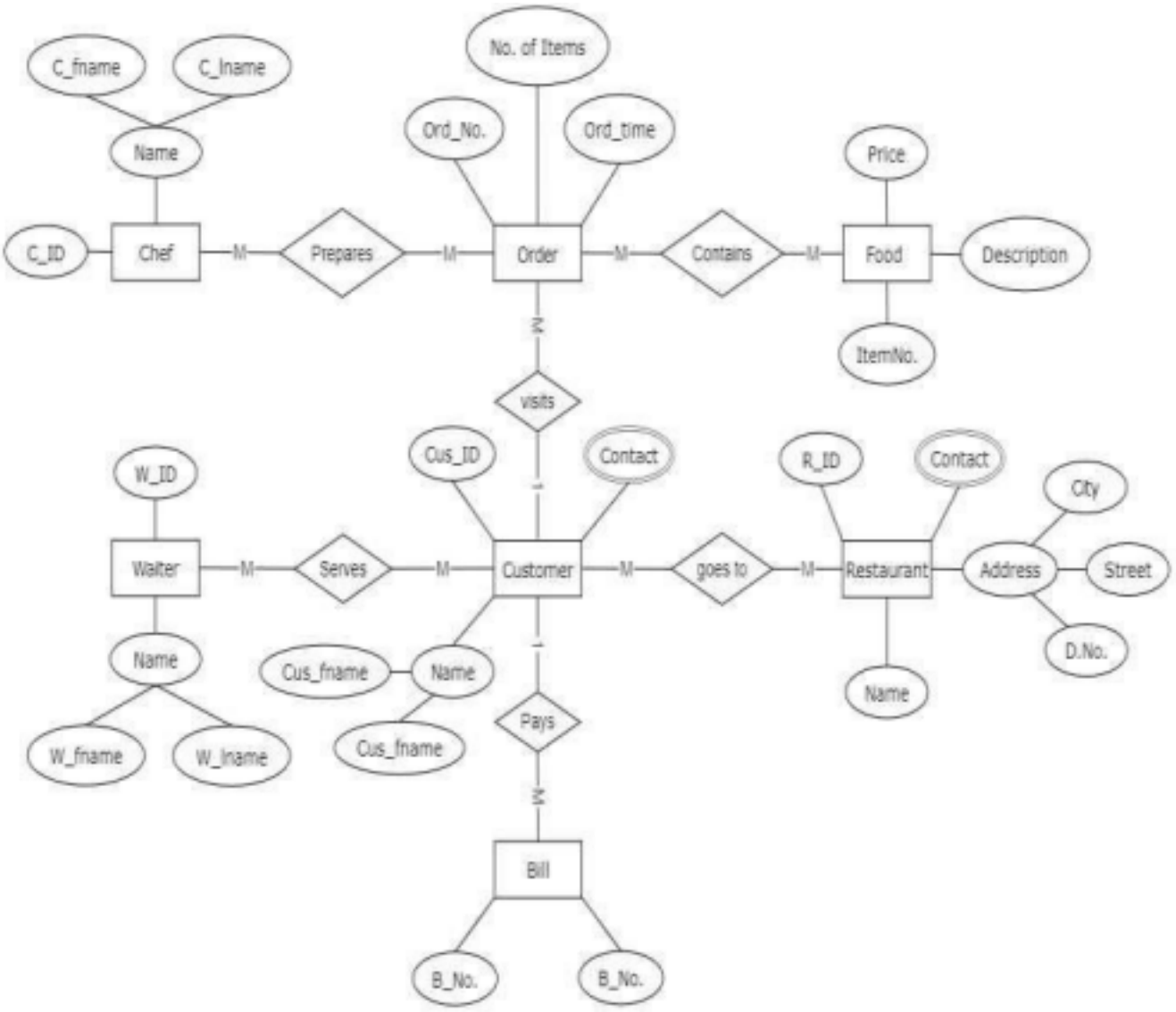


- **Chef – Order:**

  Relation: Prepares

  Cardinality: M : M

ER Diagram:



5. Description of ER Diagram:

The model of the ***simple ER diagram for restaurant management system*** is shown in this ER (Entity Relationship) Diagram. The Restaurant Management System's entity-relationship diagram shows all of the database tables. The connections between employees, sales, restaurants, orders, etc. It used structure data and to define the relationships between structured data groups of Restaurant Management System functionalities. The main entities of the Restaurant Management System are Restaurant, Employees, Items, Sells, Payments and Orders.

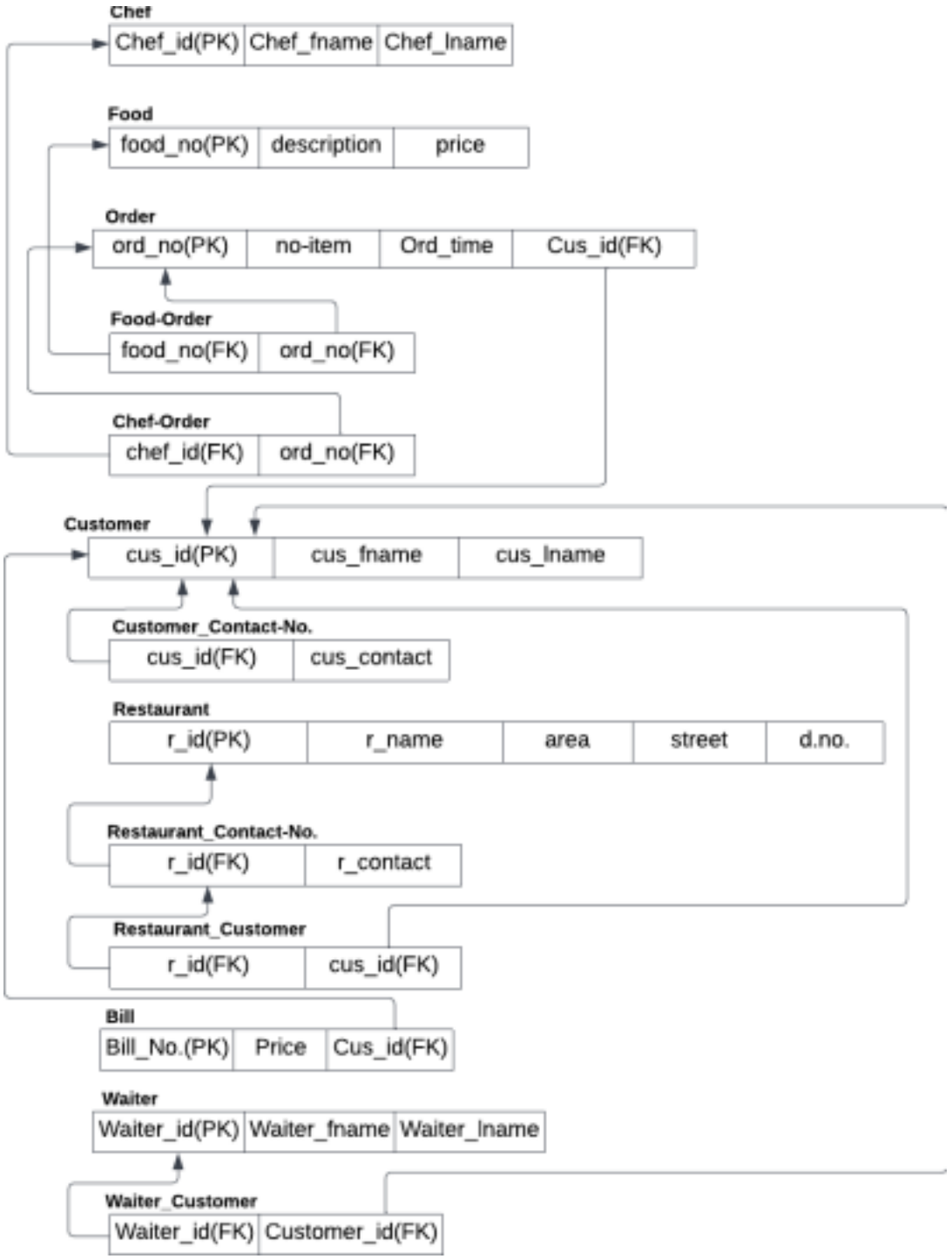
Restaurant Management System entities and their attributes:

- **Restaurant Entity :** Attributes of Restaurant are restaurant_id, restaurant_name, restaurant_type, restaurant_description, restaurant_address.
- **Customer Entity :** Attributes of Customer are customer_id, customer_name, customer_contact.
- **Items Entity :** Attributes of items are item_id, item_stocks, item_number,

item_type, item_description.

- ➢ **Sells Entity:** Attributes of sells are sell_id, sell_name, sell_type, sell_description
- ➢ **Payments Entity :** Attributes of payments are payment_id, payment_customer_id, payment_date, payment_amount, payment_description.
- ➢ **Orders Entity :** Attributes of orders are order_id, order_customer_id, order_type, order_number, order_description.

6. Converion of ER diagram into tables:



7. Description of Tables:

Chef table

```
create table Chef(
 chef_id varchar(10) primary key,
 chef_fname varchar(50) not null,
 chef_lname varchar(50)
```

```
);
```

Food table

```
create table Food(
  food_no varchar(10) primary key,
  description varchar(50),
  price int not null
);
```

Customer table

```
create table Customer(
  cus_id varchar(10) primary key,
  cus_fname varchar(50) not null,
  cus_lname varchar(50)
);
```

Order table

```
create table Ord(
   ord_no varchar(10) primary key,
   no_item int not null,
   ord_time time,
   cus_id varchar(10),
   foreign key(cus_id) references customer(cus_id)
);
```

Food_order table

```
create table Food_Order(
    food_no varchar(10),
    ord_no varchar(10),
    foreign key(food_no) references Food(food_no),
foreign key(ord_no) references Ord(ord_no) );
```

Chef_order table

```
create table chef_order(
    chef_id varchar(10),
    ord_no varchar(10),
     foreign key(chef_id) references Chef(chef_id),
```

```
foreign key(ord_no) references Ord(ord_no) );
```

Customer_contact table

```
create table Customer_contact(
    cus_id varchar(10) primary key,
    cus_contact int8 unique key not null
);
```

Restaurant_contact table

```
create table Restaurant_contact(
  r_id varchar(10) primary key,
  res_contact int8 unique key not null
);
```

Restaurant table

```
create table Restaurant(
    r_id varchar(10) primary key,
    r_name varchar(50) not null,
    dno varchar(50) not null
);
```

Restaurant_add table

```
create table Restaurant_Add(
        dno varchar(50) primary key,
    street varchar(50) not null,
    city varchar(50) not null
);
```

Restaurant_customer table

```
create table Restaurant_Customer(
  r_id varchar(10),
  cus_id varchar(10),
  foreign key(r_id) references Restaurant(r_id),
foreign key(cus_id) references Customer(cus_id) );
```

Bill table

```
create table Bill(
  b_no varchar(10) primary key,
  price int not null,
  cus_id varchar(10),
  foreign key(cus_id) references Customer(cus_id)
);
```

Waiter table

```
create table Waiter(
  w_id varchar(10) primary key,
  w_fname varchar(50) not null,
  w_lname varchar(50)
);
```

Waiter_customer table

```
create table Waiter_Customer(
 cus_id varchar(10),
 w_id varchar(10),
 foreign key(cus_id) references Customer(cus_id),
 foreign key(w_id) references waiter(w_id)
);
```

8. Normalization of tables upto 3-NF:

Normalization is used to minimize the redundancy from a relation or set of relations.

A. First Normal Form (1NF):

A relation is said to be in its First Normal form if it has got no non-atomic attribute.

B. Second Normal Form (2NF):

A relation that is in 1NF is said to have a second normal form if it satisfies any one of the following conditions.

a. The primary key contains only one attribute.

b. There exist no non-key attributes.

c. Every non-key attribute present in the relation should functionally depend upon a full set of the primary key.

C. Third Normal Form (3NF).

The relation in 2Nf is said to be 3NF if there exists no transitive dependency of any non-key attribute on the set of the primary key.

i. Chef (chef_id(pk), chef_fname, chef_lname)

1NF: It is in 1NF because it has no non-atomic attribute.

2NF: It is in 2NF Rule-1 The primary key contains only one attribute. 3NF: It is in 3NF because there is no transitive dependency among attributes. **ii.**

Food (food_no.(pk), description, price)

1NF: It is in 1NF because it has no non-atomic attribute.

2NF: It is in 2NF, because it meets rule-1 the primary key contains only one attribute.

3NF: It is in 3NF because there is no transitive dependency among attributes. **iii. Order (ord_no.(pk), no_item, ord_time, cus_id(fk))**

1NF: It is in 1NF because it has no non-atomic attribute.

2NF: It is in 2NF, because it meets rule-1 the primary key contains only one attribute.

3NF: It is in 3NF because there is no transitive dependency among attributes. **iv. Food_Order (food_no.(fk), ord_no.(fk))**

1NF: It is in 1NF because it has no non-atomic attribute.

2NF: It is in 2NF, because it meets rule-2 there are no non-key attributes. 3NF: It is in 3NF because there is no transitional dependency among attributes. **v.**

Chef_Order (chef_id(fk), ord_no.(fk))

1NF: It is in 1NF because it has no non-atomic attribute.

2NF: It is in 2NF, because it meets rule-2 there are no non-key attributes. 3NF: It is in 3NF because there is no transitional dependency among attributes. **vi.**

Customer (cus_id(pk), cus_fname, cus_lname)

1NF: It is in 1NF because it has no non-atomic attribute.

2NF: It is in 2NF, because it meets rule-1 the primary key contains only one attribute.

3NF: It is in 3NF because there is no transitional dependency among attributes.

vii. Customer_contact (cus_id(fk), contact_no.)

1NF: It is in 1NF because it has no non-atomic attribute.

2NF: It is in 2NF, because it meets rule-2 there are no non-key attributes. 3NF:

It is in 3NF because there is no transitional dependency among attributes. **viii.**

Restaurant (r_id(pk), r_name, d.no., street, city).

1NF: It is in 1NF because it has no non-atomic attribute.

2NF: It is in 2NF, because it meets rule-1 the primary key contains only one attribute.

3NF: It is not in 3NF, there is a transitional dependency among attributes.

R_id -> d.no.

d.no -> street, city.

So, these are resultant relation after decomposition and these follow the rule of 3NF, Hence, these relation are in 3NF.

Restaurant (r_id(pk), r_name, d.no.).

Restaurnat_add(d.no.(pk), street, city).

ix. Restaurant_contact (r_id(fk), contact.no.)

1NF: It is in 1NF because it has no non-atomic attribute.

2NF: It is in 2NF, because it meets rule-2 there are no non-key attributes. 3NF:

It is in 3NF because there is no transitional dependency among attributes. **x.**

Restaurant_Customer (r_id(fk), cus(fk))

1NF: It is in 1NF because it has no non-atomic attribute.

2NF: It is in 2NF, because it meets rule-2 there are no non-key attributes. 3NF:

It is in 3NF because there is no transitional dependency among attributes **xi.**

Bill(b_no.(pk), price, gst, ord_detail, cus_id(fk))

1NF: It is in 1NF because it has no non-atomic attribute.

2NF: It is in 2NF, because it meets rule-2 there are no non-key attributes. 3NF: It is in 3NF because there is no transitional dependency among attributes.

xii. Waiter (w_id(pk), w_fname, w_lname)

1NF: It is in 1NF because it has no non-atomic attribute.

2NF: It is in 2NF Rule-1 The primary key contains only one attribute. 3NF: It is in 3NF because there is no transitive dependency among attributes. **xiii.**

Customer_Waiter (w_id(fk),cus_id(fk))

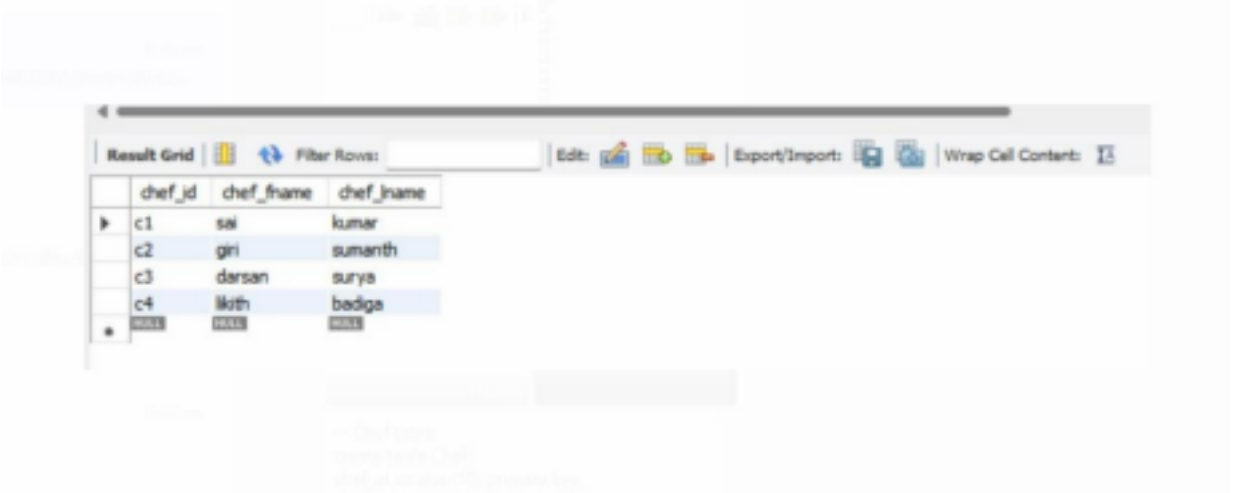
1NF: It is in 1NF because it has no non-atomic attribute.

2NF: It is in 2NF, because it meets rule-2 there are no non-key attributes. 3NF: It is in 3NF because there is no transitional dependency among attributes

9. Creation of data in tables:

Chef table

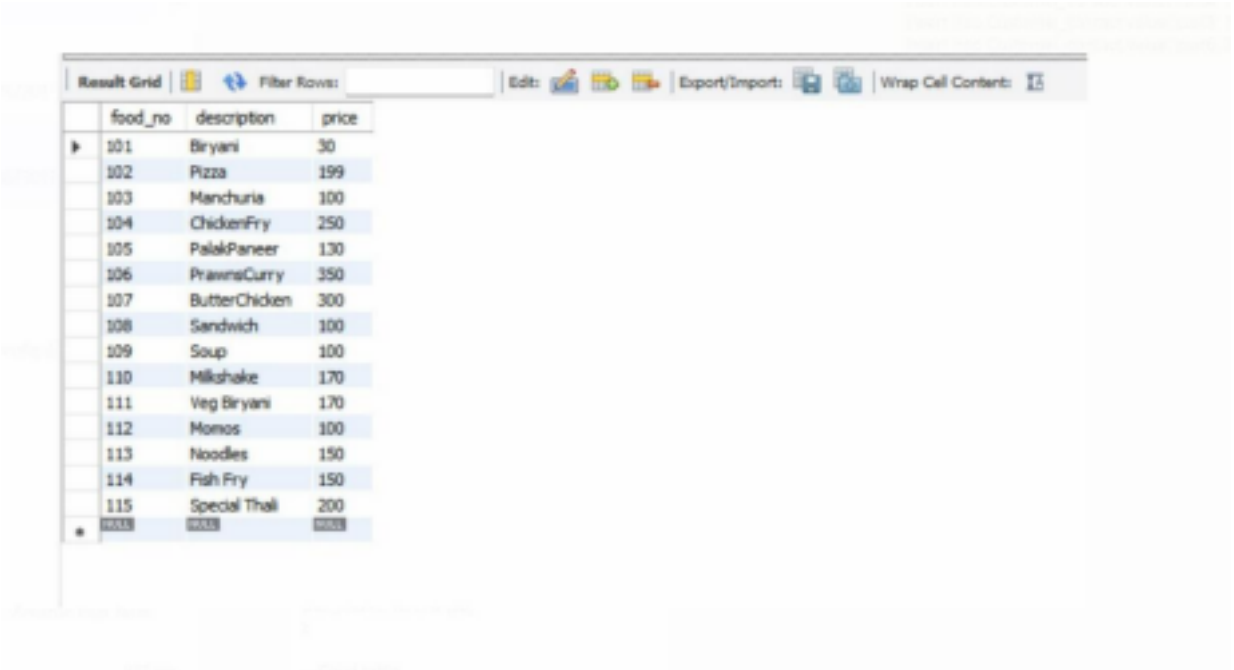
```
insert into Chef values('c1','sai','kumar');
insert into Chef values('c2','giri','sumanth');
insert into Chef values('c3','darsan','surya');
insert into Chef values('c4','likith','badiga');
```



Food table

```
insert into Food value('101','Biryani',30);
insert into Food value('102','Pizza',199);
insert into Food value('103','Manchuria',100);
insert into Food value('104','ChickenFry',250);
insert into Food value('105','PalakPaneer',130);
insert into Food value('106','PrawnsCurry',350);
insert into Food value('107','ButterChicken',300);
```

```
insert into Food value('108','Sandwich',100);
insert into Food value('109','Soup',100);
insert into Food value('110','Milkshake',170);
insert into Food value('111','Veg Biryani',170);
insert into Food value('112','Momos',100);
insert into Food value('113','Noodles',150);
insert into Food value('114','Fish Fry',150);
insert into Food value('115','Special Thali',200);
```

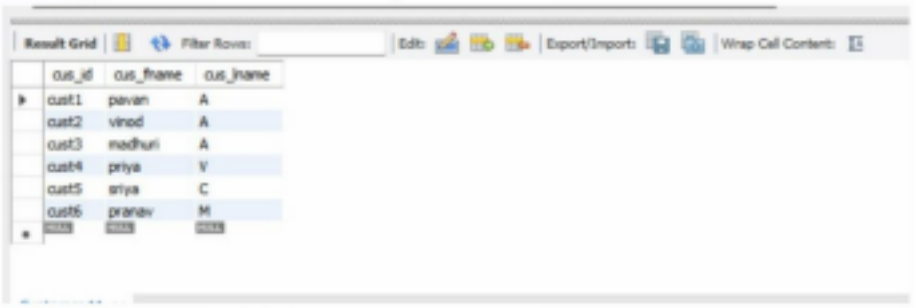


Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

food_no	description	price
101	Biryani	30
102	Pizza	199
103	Manchuria	100
104	ChickenFry	250
105	PalakPaneer	130
106	PrawnsCurry	350
107	ButterChicken	300
108	Sandwich	100
109	Soup	100
110	Milkshake	170
111	Veg Biryani	170
112	Momos	100
113	Noodles	150
114	Fish Fry	150
115	Special Thali	200

Customer table

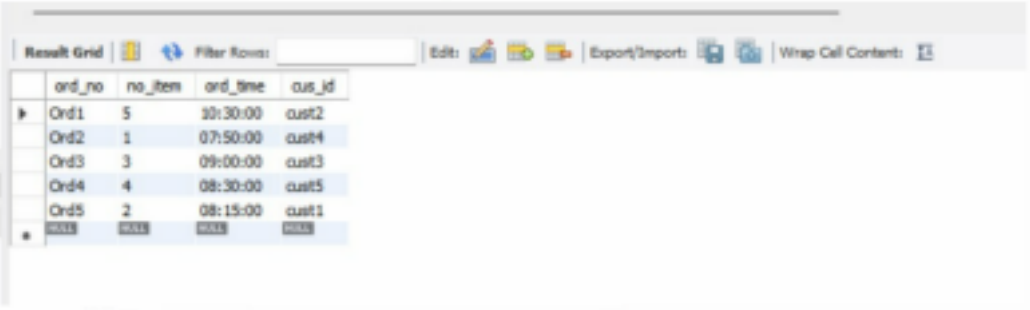
```
insert into Customer value('cust1','pavan','A');

insert into Customer value('cust2','vinod','A');

insert into Customer value('cust3','madhuri','A');

insert into Customer value('cust4','priya','V');

insert into Customer value('cust5','sriya','C');

insert into Customer value('cust6','pranav','M');
```



cus_id	cus_fname	cus_lname
cust1	pavan	A
cust2	vinod	A
cust3	madhuri	A
cust4	priya	V
cust5	sriya	C
cust6	pranav	M

Order table

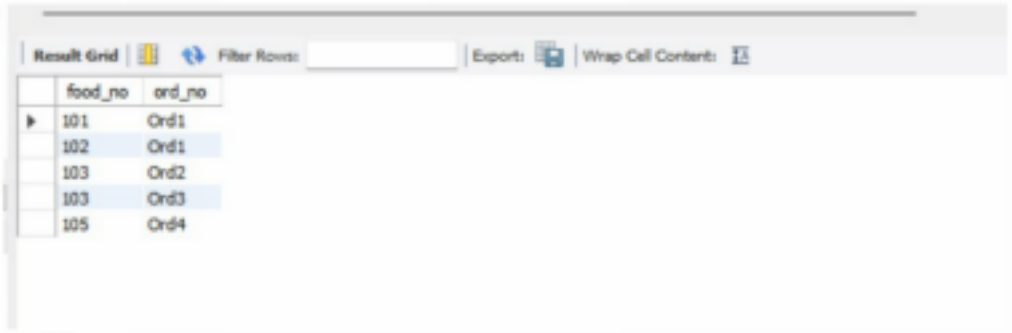
```
insert into ord value('Ord1',5,'10:30','cust2');
insert into ord value('Ord2',1,'7:50','cust4');
insert into ord value('Ord3',3,'9:00','cust3');
insert into ord value('Ord4',4,'8:30','cust5');
insert into ord value('Ord5',2,'8:15','cust1');
```



ord_no	no_item	ord_time	cus_id
Ord1	5	10:30:00	cust2
Ord2	1	07:50:00	cust4
Ord3	3	09:00:00	cust3
Ord4	4	08:30:00	cust5
Ord5	2	08:15:00	cust1

Food_order table

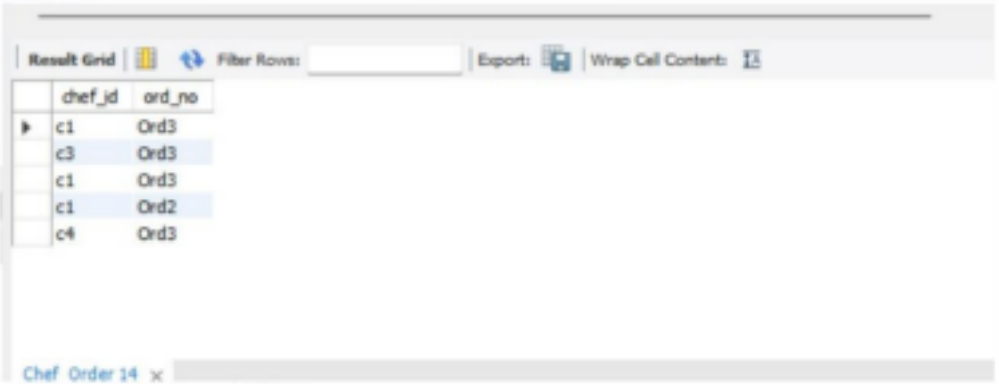
```
insert into Food_Order value('101','Ord1');

insert into Food_Order value('102','Ord1');

insert into Food_Order value('103','Ord2');

insert into Food_Order value('103','Ord3');


insertintoFood_Ordervalue('105','Ord4')
```



food_no	ord_no
101	Ord1
102	Ord1
103	Ord2
103	Ord3
105	Ord4

Chef_order table

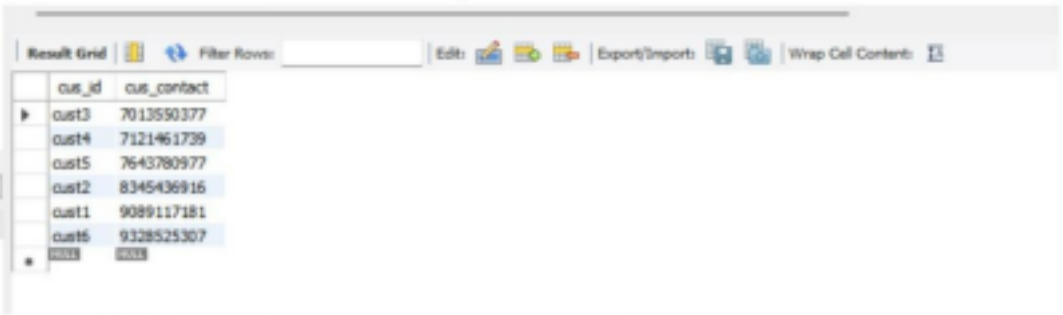
```
insert into Chef_Order value('c1','Ord3');
insert into Chef_Order value('c3','Ord3');
insert into Chef_Order value('c1','Ord3');
insert into Chef_Order value('c1','Ord2');
insert into Chef_Order value('c4','Ord3');
```



chef_id	ord_no
c1	Ord3
c3	Ord3
c1	Ord3
c1	Ord2
c4	Ord3

Customer_contact table

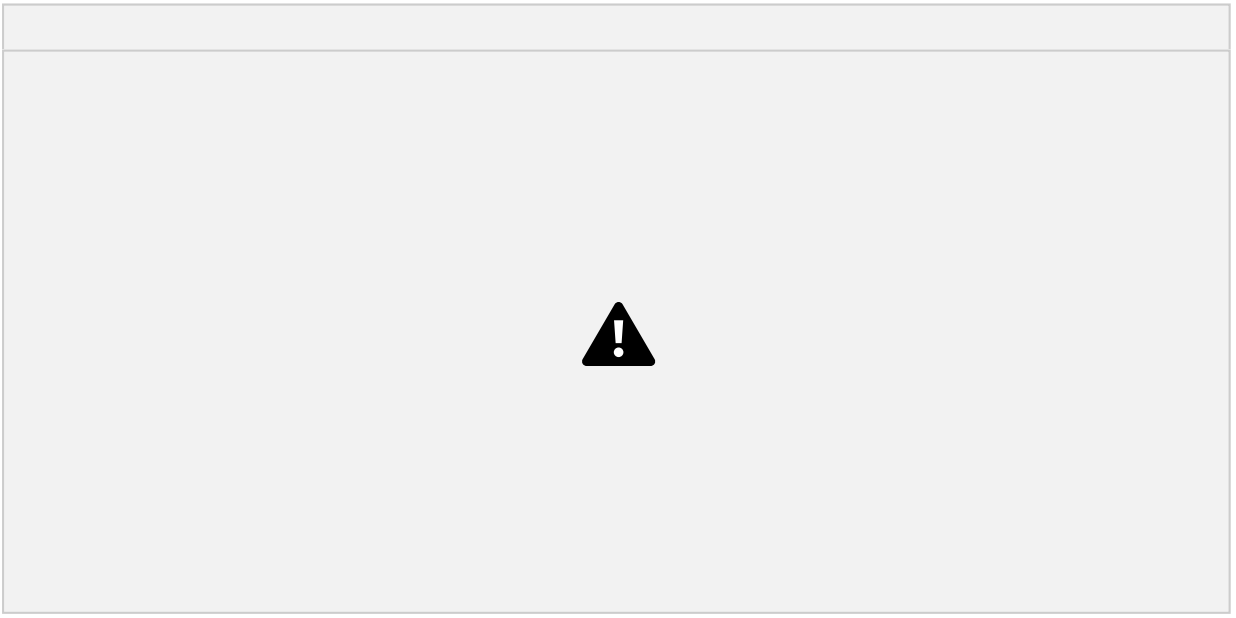
```
insert into Customer_contact value('cust1',9089117181);

insert into Customer_contact value('cust2',8345436916);

insert into Customer_contact value('cust3',7013550377);

insert into Customer_contact value('cust4',7121461739);

insert into Customer_contact value('cust5',7643780977);

insertintoCustomer_contactvalue('cust6',9328525307);
```

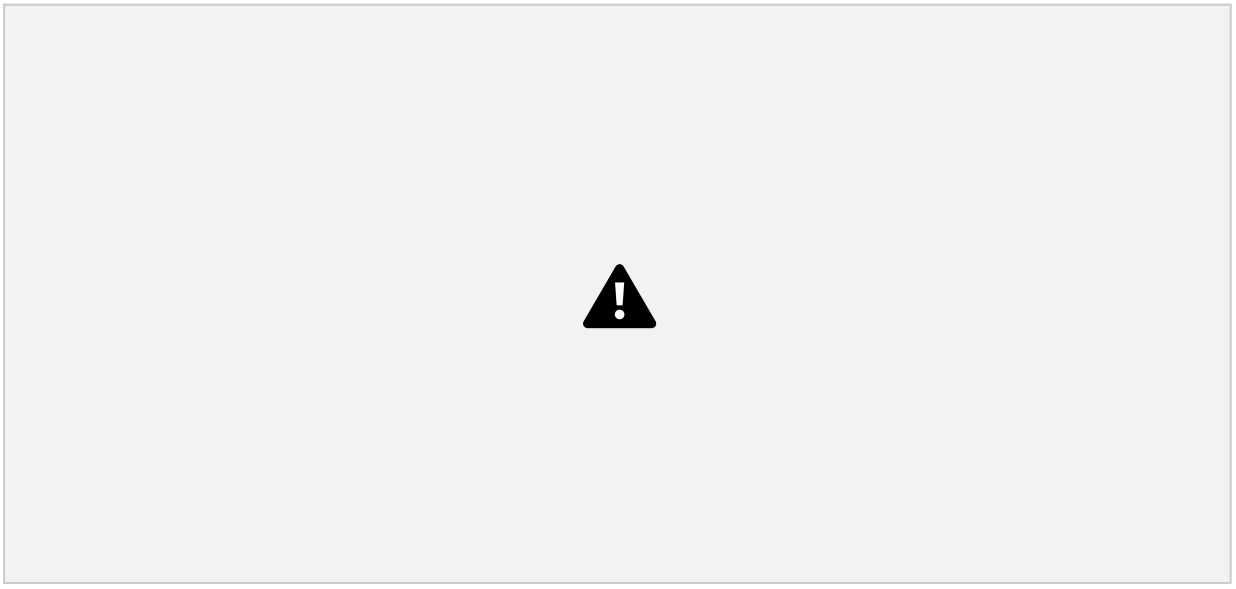


cus_id	cus_contact
cust3	7013550377
cust4	7121461739
cust5	7643780977
cust2	8345436916
cust1	9089117181
cust6	9328525307

Restaurant_contact table

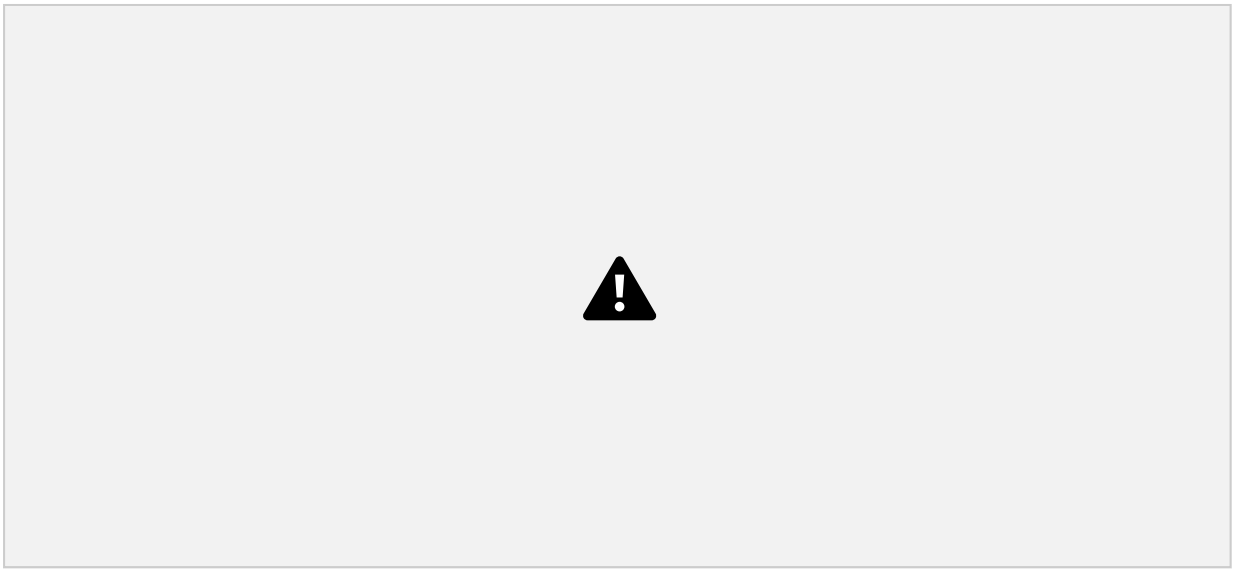
insert into Restaurant_contact value('rest1',7737737328);
insert into Restaurant_contact value('rest2',9383554859);
insert into Restaurant_contact value('rest3',9639939285);
insert into Restaurant_contact value('rest4',9377205433);
insert into Restaurant_contact value('rest5',9022627887);





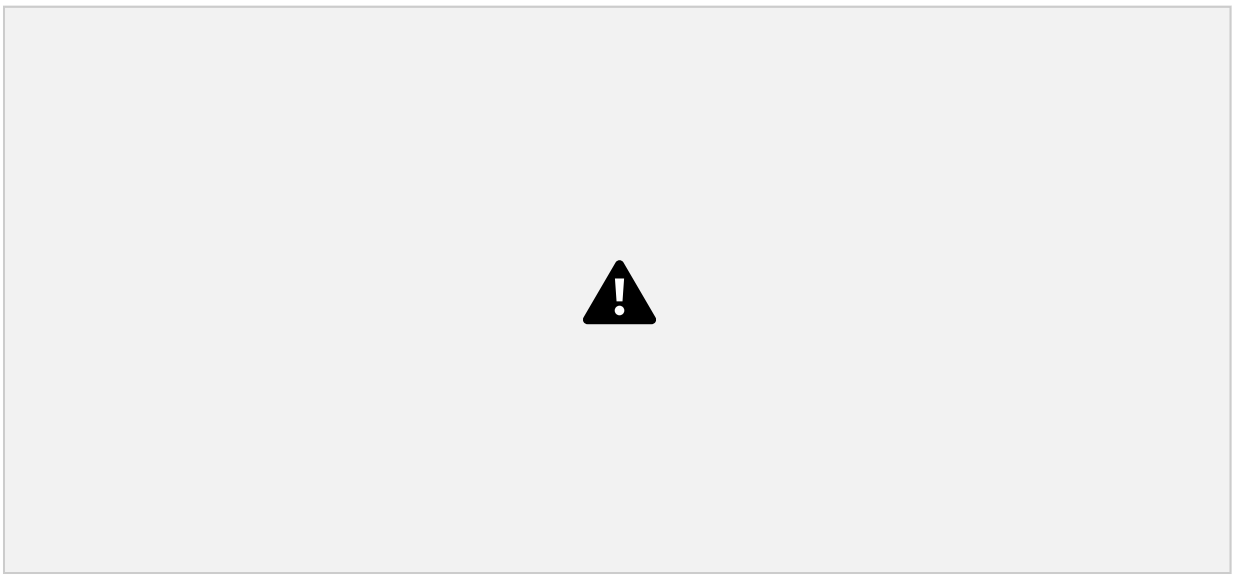
Restaurant table

```
insert into Restaurant value('rest1','Novotel',35);
insert into Restaurant value('rest2','DVManor',48);
insert into Restaurant value('rest3','BarbequeNation',27);
insert into Restaurant value('rest4','Alfa',18);
insert into Restaurant value('rest5','Babai Hotel',4);
```



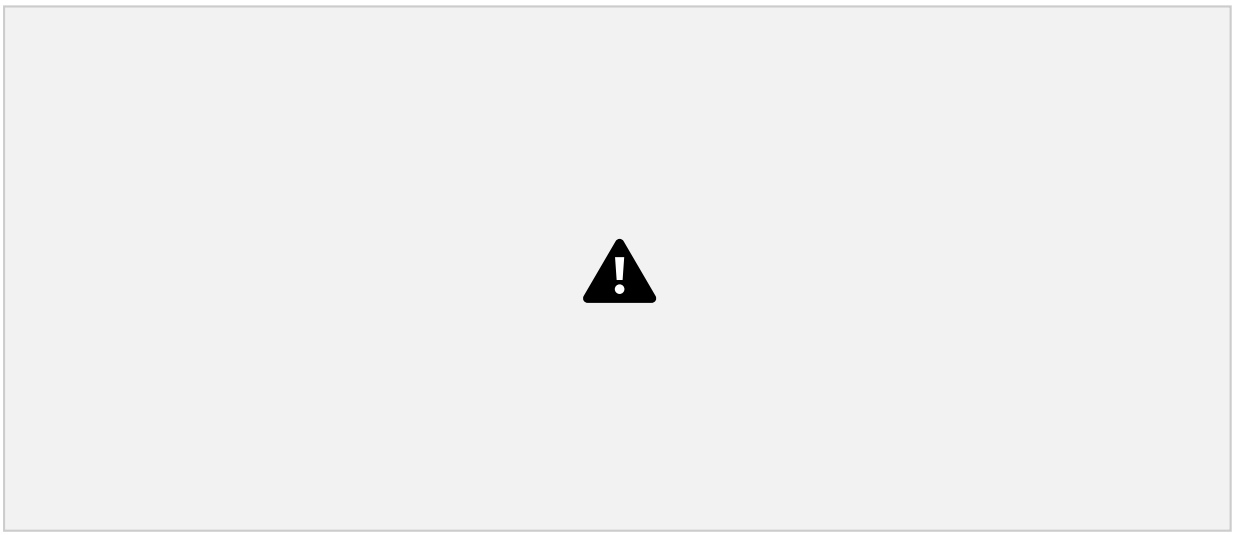
Restaurant_add table

```
insert into Restaurant_add value('32','MGRoad','Eluru');
insert into Restaurant_add value('45','Ranga Bomma Center','Kaikalur');
insert into Restaurant_add value('21','RamaRao Street','Vijayawada');
insert into Restaurant_add value('15','Labbipet','Hyderabad'); insert
into Restaurant_add value('6','EluruRoad','Eluru');
```



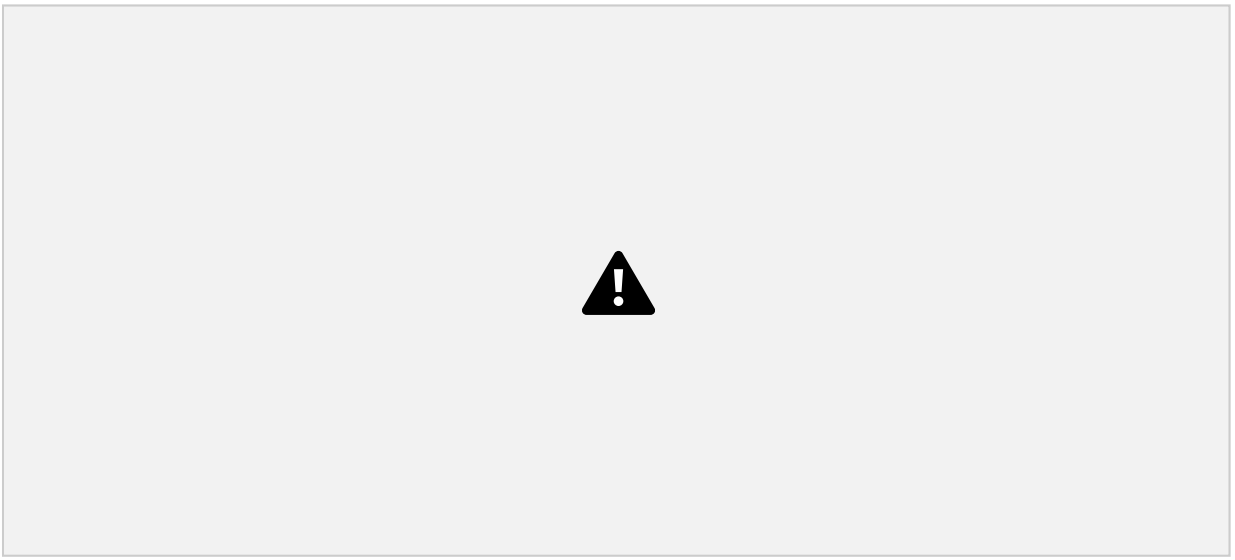
Restaurant_customer table

```
insert into Restaurant_Customer value('rest1','cust1');

insert into Restaurant_Customer value('rest3','cust2');

insert into Restaurant_Customer value('rest2','cust3');

insert into Restaurant_Customer value('rest5','cust4');

insertintoRestaurant_Customervalue('rest4','cust5');
```



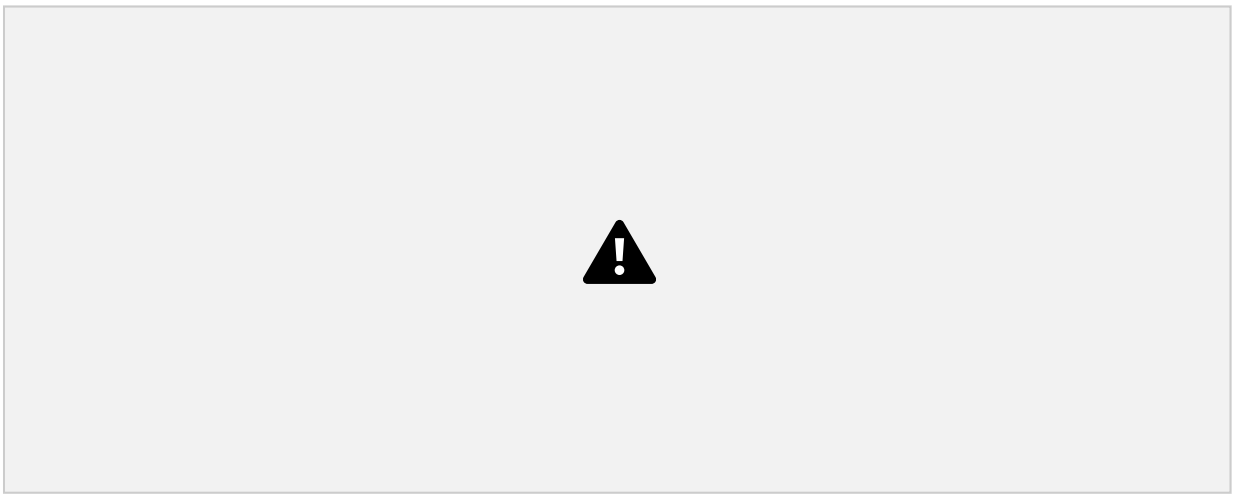
Bill table

```
insert into Bill value('bill1',200,'cust1');
insert into Bill value('bill2',860,'cust3');
insert into Bill value('bill3',7500,'cust4');
insert into Bill value('bill4',1500,'cust2');
```



Waiter table

```
insert into waiter value('wor1','Aftab','A');
insert into waiter value('wor2','Darsan','D');
insert into waiter value('wor3','Sai','S');
insert into waiter value('wor4','Likki','L');
insert into waiter value('wor5','Girri','G');
```



Waiter_customer table

```
insert into waiter_customer value('cust1','wor1');
insert into waiter_customer value('cust2','wor1');
insert into waiter_customer value('cust3','wor2');
insert into waiter_customer value('cust4','wor3');
insert into waiter_customer value('cust5','wor2');
insert into waiter_customer value('cust6','wor4');
```