Restaurant Management System

August 21, 2020

1 Introduction

Restaurant is the kind of business that serves the people all over the world through the ready-made foods. There are the employees or the waiters who come near the tables of the customers to ask for the orders. Due to some misunderstanding by the employees there might be a chance of getting dish that was not ordered. Besides, there are chef for particular dishes. There is manager to maintain all who maintains everything and cashier who makes bills. To store every these information, the restaurant management database project can be useful.

2 Objectives

- **To provide ordering and reservation service to the customers.**
- **Adding, deleting items from the menu or updating any item's price.**
- **To keep a record of new employees and left employees.**
- **Opening new branches and keeping the employees data.**
- **To keep bills of every customer based on their orders.**
- **To manage the orders placed by the customers through this system.**

3 Necessities with Description

3.1 Easy to Use

The interfaces of a restaurant management system are made for ease of usage, an excellent experience for restaurant staff. Also, using this, it is easier to train new members and helps reduce training costs in terms of time and money.

3.2 Support Availability

Good restaurant management systems provide with quick support when they are needed.

3.3 Analytic and Reporting

With the advent of data into analytic and insights reporting, restaurants are able to make much more informed decisions. Restaurants define a few key metrics and analyze traffic from there. The goal of any analytic system is to throw light on what is working and what is not, derive meaningful conclusions from data. All the data of employees working and customers are kept in one place.

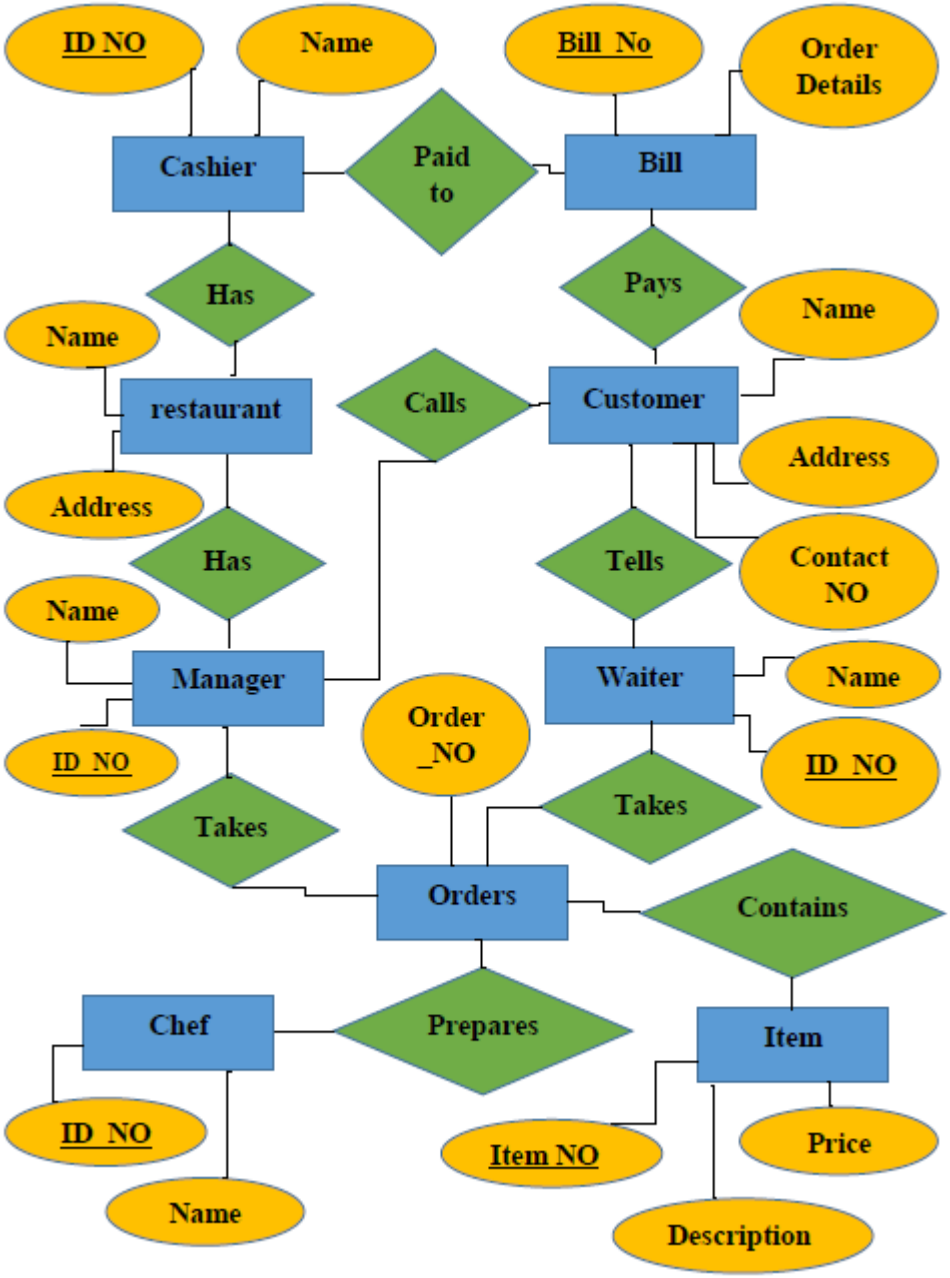
3.4 Theft Control and Security

Before investing in a system, do check what kind of threats it can be susceptible to. As the system is now mobile, it may be operated from different locations and different people increasing the likelihood of leaking of essential information. The system should be designed to make it immune against all possible invasions. The restaurant management system is a storehouse of all the personal data of customers, office, billing details and so forth. In that scenario, the Restaurant Management System must ensure data privacy and protection for both restaurant and customers. A good software security architecture should enable all this so that it can be run and operated on with minimal risk.

3.5 Mobility

As mentioned before , the new Restaurant Management System is pretty much mobile.

4 ER Diagram



4.1 Entities with Attributes

- **Bill** (Bill No., Cashier No., Order Details)
- **Cashier** (Id No., Restaurant No., Name)

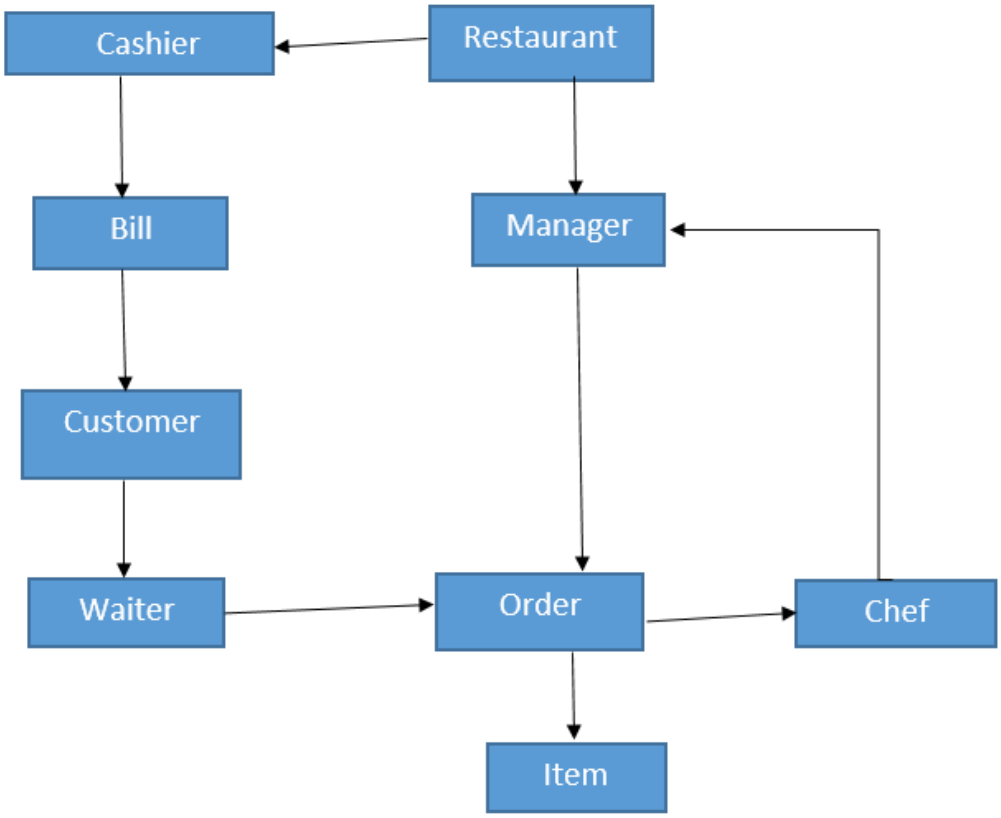
- **Chef** (Id No., Name)
- **Customer** (Name, Address, Contact No., Bill No., Manager No., Waiter No.)
- **Item** (Item No., Description, Price)
- **Manager** (Id No., Name, Restaurant No., Contact No.)
- **Orders** (Order No., Waiter No., Manager No., Chef No., Item No.)
- **Restaurant** (Serial No., Name, Address)
- **Waiter** (Id No., Name)

4.2 Primary Keys and Foreign Keys

- **Bill:** Primary: Bill No.
  Foreign: Cashier No.
- **Cashier:** Primary: Id No.
  Foreign: Restaurant No.
- **Chef:** Primary: Id No.
  Foreign: Cashier No.
- **Customer:** Primary: Name.
  Foreign: Bill No., Manager No., Waiter No.
- **Item:** Primary: Item No.
- **Manager:** Primary: Id No.
  Foreign: Restaurant No.
- **Orders:** Primary: Order No.
  Foreign: Waiter No., Manager No., Chef No., Item No.
- **Restaurant:** Primary: Serial No.
- **Waiter:** Primary: Id No.

5 Networking Diagram

Networking Diagram:



6 Operations on Tables

6.1 Fig 1: Creating database and table

c:\wamp64\bin\mysql\mysql5.7.26\bin\mysql.exe

```
mysql> create database restaurant;
Query OK, 1 row affected (0.00 sec)

mysql> use restaurant;
Database changed
mysql> create table Restaurant(
    -> Serial_No int,
    -> primary key(Serial_No),
    -> Name varchar(30),
    -> Adress varchar(30));
Query OK, 0 rows affected (0.00 sec)

mysql> create table Cashier(
    -> Id_No int,
    -> primary key(Id_No),
    -> Name varchar(30),
    -> Restaurant_No int,
    -> foreign key(Restaurant_No) references Restaurant(Serial_No));
Query OK, 0 rows affected (0.00 sec)

mysql> alter table Restaurant drop column Adress;
Query OK, 0 rows affected (0.01 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table Restaurant add Address varchar(30);
Query OK, 0 rows affected (0.01 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> create table Manager(
    -> Id_No int,
    -> primary key(Id_No),
    -> Name varchar(30),
    -> Restaurant_No int,
    -> foreign key(Restaurant_No) references Restaurant(Serial_No),
    -> Contact_No varchar(20));
Query OK, 0 rows affected (0.01 sec)

mysql> create table Bill(
    -> Bill_No int,
    -> primary key(Bill_No),
    -> Order_Details varchar(30),
    -> Cashier No int,
```

6.2 Fig 2: Creating table

c:\wamp64\bin\mysql\mysql5.7.26\bin\mysql.exe

```
Query OK, 0 rows affected (0.01 sec)

mysql> create table Bill(
    -> Bill_No int,
    -> primary key(Bill_No),
    -> Order_Details varchar(30),
    -> Cashier_No int,
    -> foreign key(Cashier_No) references Cashier(Id_No));
Query OK, 0 rows affected (0.01 sec)

mysql> create table Chef(
    -> Id_No int,
    -> primary key Id_No,
    -> Name varchar(30));
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to you
r MySQL server version for the right syntax to use near '
Name varchar(30))' at line 3
mysql> create table Chef(
    -> Id_No int,
    -> primary key(Id_No),
    -> Name varchar(30));
Query OK, 0 rows affected (0.00 sec)

mysql> create table Item(
    -> Item_No int,
    -> primary key(Item_No),
    -> Description varchar(30),
    -> Price varchar(30));
Query OK, 0 rows affected (0.00 sec)
```

6.3 Fig 3: Creating table

```
mysql> create table Waiter(
    -> Id_No int,
    -> primary key(Id_No),
    -> Address varchar(30));
Query OK, 0 rows affected (0.00 sec)

mysql> create table Orders(
    -> Order_No int,
    -> Waiter_No int,
    -> foreign key(Waiter_No) references Waiter(Id_No),
    -> Manager_No int,
    -> foreign key(Manager_No) references Manager(Id_No),
    -> Chef_No int,
    -> foreign key(Chef_No) references Chef(Id_No),
    -> Item_No int,
    -> foreign key(Item_No) references Item(Item_No));
Query OK, 0 rows affected (0.01 sec)

mysql> create table Customer(
    -> Name varchar(30),
    -> Address varchar(30),
    -> Contact_No varchar(20),
    -> Bill_No int,
    -> foreign key(Bill_No) references Bill(Bill_No),
    -> Manager_No int,
    -> foreign key(Manager_No) references Manager(Id_No),
    -> Waiter_No int,
    -> foreign key(Waiter_No) references Waiter(Id_No));
Query OK, 0 rows affected (0.00 sec)
```

6.4 Fig 4: Inserting Data

```
mysql> insert into waiter values(72,'Albus Severus');
Query OK, 1 row affected (0.00 sec)

mysql> insert into restaurant values(5,'Shwarma Palace','62 Queens');
Query OK, 1 row affected (0.00 sec)

mysql> insert into orders values(1,68,52,5);
ERROR 1136 (21S01): Column count doesn't match value count at row 1
mysql> insert into manager values(44,'Jinnie Weasely',1,03958176854);
Query OK, 1 row affected (0.00 sec)

mysql> insert into item values(11,'Burger',180);
Query OK, 1 row affected (0.00 sec)

mysql> insert into customer values('Rupert Malfoy','55 Frankfurt','09583193567',23,42,61);
Query OK, 1 row affected (0.00 sec)

mysql> insert into chef values(12,'Hagrid');
Query OK, 1 row affected (0.00 sec)

mysql> insert into cashier values(57,'Granger Harmione',1);
Query OK, 1 row affected (0.00 sec)
```

6.5 Fig 5: Display

```
mysql> select * from bill;
+---------+------------+----------------------+
| Bill_No | Cashier_No | Order_Details        |
+---------+------------+----------------------+
|      23 |         56 | Capuccino-1          |
|      55 |         56 | Lemonade-2           |
|      87 |         58 | Juice-1              |
|      20 |         21 | Nachos-1             |
|      80 |         23 | Strawberry Cupcake-1 |
|      77 |         21 | Shawarma-5           |
+---------+------------+----------------------+
6 rows in set (0.00 sec)

mysql> select * from cashier;
+-------+------------------+---------------+
| Id_No | Name             | Restaurant_No |
+-------+------------------+---------------+
|    56 | David Richard    |             2 |
|    58 | Peter Parker     |             2 |
|    21 | Bucky Barnes     |             1 |
|    23 | Peggy Carter     |             4 |
|    57 | Granger Harmione |             1 |
+-------+------------------+---------------+
5 rows in set (0.00 sec)

mysql> select * from chef;
+-------+------------+
| Id_No | Name       |
+-------+------------+
|    13 | Linguini   |
|    17 | Gustav     |
|    11 | Colette    |
|    18 | Romano     |
|    20 | Butterbean |
|    12 | Hagrid     |
+-------+------------+
6 rows in set (0.00 sec)
```

6.6 Fig 6: Display

```
mysql> select * from customer;
+------------------+---------------+-------------+---------+------------+-----------+
| Name             | Address       | Contact_No  | Bill_No | Manager_No | Waiter_No |
+------------------+---------------+-------------+---------+------------+-----------+
| Sam Wilson       | 26,Newtown    | 05437821989 |      23 |         46 |        65 |
| Clint Barton     | 78 Las Vegas  | 06789215678 |      87 |         42 |        69 |
| Natasha Romanoff | 54 Washington | 03789154236 |      55 |         46 |        65 |
| Tony Stark       | 21,New York   | 09689654321 |      20 |         51 |        63 |
| Chris Evans      | 66,Brooklyn   | 03567891234 |      80 |         52 |        61 |
| Thor Odinson     | 90,Asgard     | 0543789216  |      77 |         51 |        66 |
| Rupert Malfoy    | 55 Frankfurt  | 09583193567 |      23 |         42 |        61 |
+------------------+---------------+-------------+---------+------------+-----------+
7 rows in set (0.00 sec)

mysql> select * from item;
+---------+----------------------+-------+
| Item_No | Description          | Price |
+---------+----------------------+-------+
|       1 | Espresso             | 90    |
|       2 | Americano            | 80    |
|       3 | Cappucino            | 120   |
|       4 | Cafe Latte           | 120   |
|       5 | Chocolate Milkshake  | 120   |
|       6 | Ice Lemon Tea        | 100   |
|       7 | Chicken Shawarma     | 120   |
|       8 | Red Velvet Cake      |       |
|       9 | Strawberry Cupcake   | 150   |
|      10 | Double Cheese Nachos | 200   |
|      11 | Burger               | 180   |
+---------+----------------------+-------+
11 rows in set (0.00 sec)

mysql> select * from manager;
+-------+----------------+---------------+--------------+
| Id_No | Name           | Restaurant_No | Contact_No   |
+-------+----------------+---------------+--------------+
|    44 | Jinnie Weasely |             1 | 3958176854   |
|    46 | Mark Ruffalo   |             2 | 0976542167   |
|    51 | Wanda Maximoff |             1 | 027895321756 |
|    52 | Paper Potts    |             4 | 04758932167  |
+-------+----------------+---------------+--------------+
4 rows in set (0.00 sec)
```

6.7 Fig 7: Display

```
mysql> select * from orders;
+----------+-----------+------------+---------+---------+
| Order_No | Waiter_No | Manager_No | Chef_No | Item_No |
+----------+-----------+------------+---------+---------+
|        3 |        66 |         42 |      11 |       3 |
|        9 |        65 |         42 |      13 |       2 |
|        6 |        69 |         46 |      17 |       6 |
|        8 |        61 |         51 |      20 |       4 |
+----------+-----------+------------+---------+---------+
4 rows in set (0.00 sec)

mysql> select * from restaurnat;
ERROR 1146 (42S02): Table 'restaurant.restaurnat' doesn't exist
mysql> select * from restaurant;
+-----------+-----------------+-----------------+
| Serial_No | Name            | Address         |
+-----------+-----------------+-----------------+
|         2 | Starbucks       | 23,New Jersey   |
|         4 | Starbucks       | 25,Massachusets |
|         1 | Shawarma Palace | 45,New York     |
|         5 | Shwarma Palace  | 62 Queens       |
+-----------+-----------------+-----------------+
4 rows in set (0.00 sec)

mysql> select * from waiter;
+-------+---------------+
| Id_No | Name          |
+-------+---------------+
|    65 | Henry Dick    |
|    66 | Fred Milan    |
|    69 | Sam Ross      |
|    63 | Peter Quil    |
|    61 | Chris Pratt   |
|    72 | Albus Severus |
+-------+---------------+
6 rows in set (0.00 sec)
```

6.8 Fig 8: Find the item descriptions in the item relation.

```
mysql> select Description from Item;
+----------------------+
| Description          |
+----------------------+
| Espresso             |
| Americano            |
| Cappucino            |
| Cafe Latte           |
| Chocolate Milkshake  |
| Ice Lemon Tea        |
| Lassi                |
+----------------------+
7 rows in set (0.01 sec)
```

6.9 Fig 9: Find the items with prices less than 100.

```
mysql> select Item_No,Description from Item where Price<100;
+---------+-------------+
| Item_No | Description |
+---------+-------------+
|       1 | Espresso    |
|       2 | Americano   |
|       7 | Lassi       |
+---------+-------------+
3 rows in set (0.00 sec)
```

6.10 Fig 10: Find names and contact no of customer who live in 54 Alipur.

```
mysql> select Name,Contact_No from Customer where Address='54 Alipur';
+------------------+------------+
| Name             | Contact_No |
+------------------+------------+
| Natasha Romanoff |  298760326 |
| Hans Denver      |  426789326 |
+------------------+------------+
2 rows in set (0.00 sec)
```

6.11 Fig 11: Join operation

```
mysql> select Restaurant.Serial_No,Restaurant.Name as RName,Restaurant.Address,Cashier.Id_No as CID,Cashier.Name as CName,Cashier.Restaurant_No,Manager.Id_No as MID,Manager
.Name as MName,Manager.Restaurant_No,Manager.Contact_No from Restaurant inner join Cashier on Restaurant.Serial_No=Cashier.Restaurant_No inner join Manager on Restaurant.Se
rial_No=Manager.Restaurant_No;
+-----------+---------------+-----------------+-----+-----------------+---------------+-----+---------------+---------------+-------------+
| Serial_No | RName         | Address         | CID | CName           | Restaurant_No | MID | MName         | Restaurant_No | Contact_No  |
+-----------+---------------+-----------------+-----+-----------------+---------------+-----+---------------+---------------+-------------+
|         2 | Starbucks     | 23,New Jersey   |  56 | David Richard   |             2 |  46 | Mark Ruffalo  |             2 | 0976542167  |
|         2 | Starbucks     | 23,New Jersey   |  58 | Peter Parker    |             2 |  46 | Mark Ruffalo  |             2 | 0976542167  |
|         1 | Shawarma Palace | 45,New York   |  21 | Bucky Barnes    |             1 |  44 | Jinnie Weasely |            1 | 3958176854  |
|         1 | Shawarma Palace | 45,New York   |  21 | Bucky Barnes    |             1 |  51 | Wanda Maximoff |            1 | 027895321756 |
|         4 | Starbucks     | 25,Massachusets |  23 | Peggy Carter    |             4 |  52 | Paper Potts   |             4 | 04758932167 |
|         1 | Shawarma Palace | 45,New York   |  57 | Granger Harmione |            1 |  44 | Jinnie Weasely |            1 | 3958176854  |
|         1 | Shawarma Palace | 45,New York   |  57 | Granger Harmione |            1 |  51 | Wanda Maximoff |            1 | 027895321756 |
+-----------+---------------+-----------------+-----+-----------------+---------------+-----+---------------+---------------+-------------+
7 rows in set (0.01 sec)
```

6.12 Fig 12: Aggregate operation

```
mysql> select sum(Price) from item;
+-------------+
| sum(Price) |
+-------------+
|        1280 |
+-------------+
1 row in set (0.00 sec)

mysql> select avg(Price) from item;
+---------------------+
| avg(Price)          |
+---------------------+
| 116.36363636363636 |
+---------------------+
1 row in set (0.00 sec)

mysql> select max(Price) from item;
+-------------+
| max(Price) |
+-------------+
| 90          |
+-------------+
1 row in set (0.00 sec)

mysql> select min(Price) from item;
+-------------+
| min(Price) |
+-------------+
|             |
+-------------+
1 row in set (0.00 sec)

mysql> select count(Name) from customer;
+--------------+
| count(Name) |
+--------------+
|             7 |
+--------------+
1 row in set (0.00 sec)
```

7 Representation in a file

7.1 Fig 1: Save and Display of A Table(php)

```
<html>
  <head>
    <title>Customer</title>
  </head>

  <body>
    <img src="MARVEL.jpg" style="width:100%; height:100%; position:absolute; top:0; left:0; z-index:-5000;">
    <form action="" method="post" style="border:2px solid #a91cb0; background-color: #a4f9ef7F; text-align:center;">
      <table align="center" style=" font-style: italic; font-size:20pt; font-weight:Bold; ">
        <tr>
          <td>Enter Customer Name: </td>
          <td> <input name="Name" type="text"> </td>
        </tr>
        <tr>
          <td>Enter Customer Address: </td>
          <td> <input name="Address" type="text"> </td>
        </tr>
        <tr>
          <td>Enter Contact No: </td>
          <td> <input name="Contact_No" type="text"> </td>
        </tr>
        <tr>
          <td>Enter Bill No: </td>
          <td> <input name="Bill_No" type="value"> </td>
        </tr>
        <tr>
          <td>Enter Manager No: </td>
          <td> <input name="Manager_No" type="value"> </td>
        </tr>
```

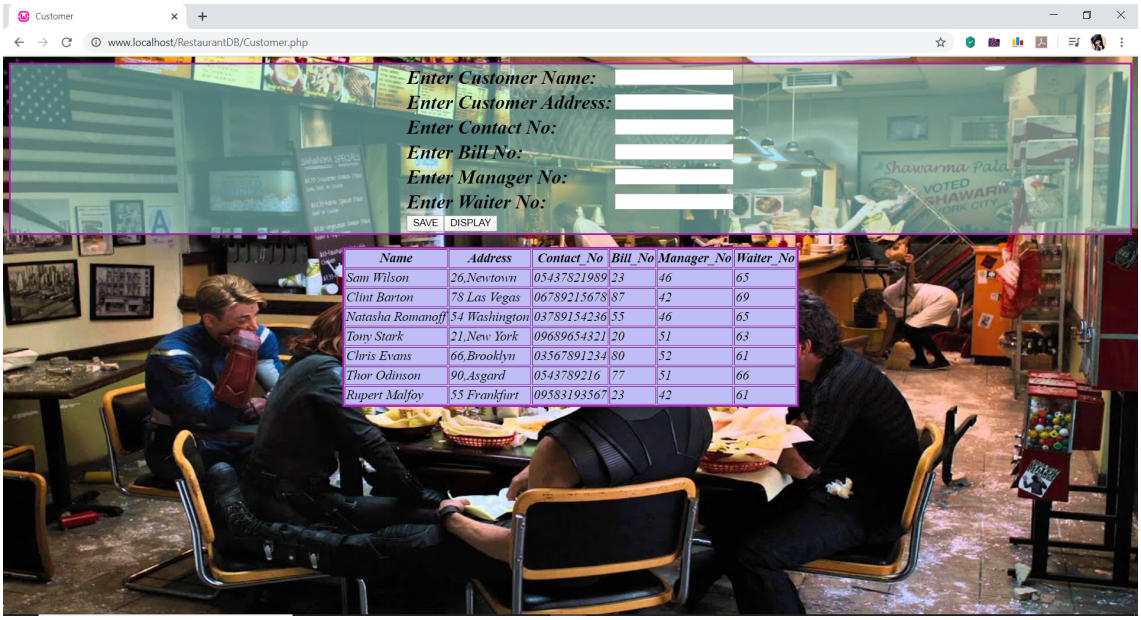
7.2 Fig 2: Save and Display of A Table(php)

```
        <tr>
          <td>Enter Waiter No: </td>
          <td> <input name="Waiter_No" type="value"> </td>
        </tr>

        <tr>
          <td> <input name="x" type="submit" value="SAVE"><input name="y" type="submit" value="DISPLAY"> </td>
        </tr>
      </table>
    </form>

    <?php

      $con=mysqli_connect("localhost","root","","restaurant");

      if(isset($_REQUEST['x']))
      {
        $a=$_REQUEST['Name'];
        $b=$_REQUEST['Address'];
        $c=$_REQUEST['Contact_No'];
        $d=$_REQUEST['Bill_No'];
        $e=$_REQUEST['Manager_No'];
        $f=$_REQUEST['Waiter_No'];

        $q="insert into Customer values('$a','$b','$c',$d,$e,$f)";
        $result=mysqli_query($con,$q);
      }

      if(isset($_REQUEST['y']))
      {
        $disp="select * from Customer";
        $result=mysqli_query($con,$disp);
```

7.3 Fig 3: Save and Display of A Table(php)

```php
        $q="insert into Customer values('$a','$b','$c',$d,$e,$f)";
        $result=mysqli_query($con,$q);
    }

    if(isset($_REQUEST['y']))
    {
        $disp="select * from Customer";
        $result=mysqli_query($con,$disp);
        echo '<table border=10  align="center"  style="border:2px solid #a91cb0;  background-color: #bebdf5;  font-style: italic;  font-size:18;">';
          echo '<tr><th>Name</th><th>Address</th><th>Contact_No</th><th>Bill_No</th><th>Manager_No</th><th>Waiter_No</th></tr>';

          while($row=mysqli_fetch_array($result))
          {
            echo'<tr>';
              echo '<td>'.$row['Name'].'</td>';
              echo '<td>'.$row['Address'].'</td>';
              echo '<td>'.$row['Contact_No'].'</td>';
              echo '<td>'.$row['Bill_No'].'</td>';
              echo '<td>'.$row['Manager_No'].'</td>';
              echo '<td>'.$row['Waiter_No'].'</td>';
            echo'</tr>';
          }

        echo '</table>';
    }

    mysqli_close($con);
  ?>

  </body>
</html>
```

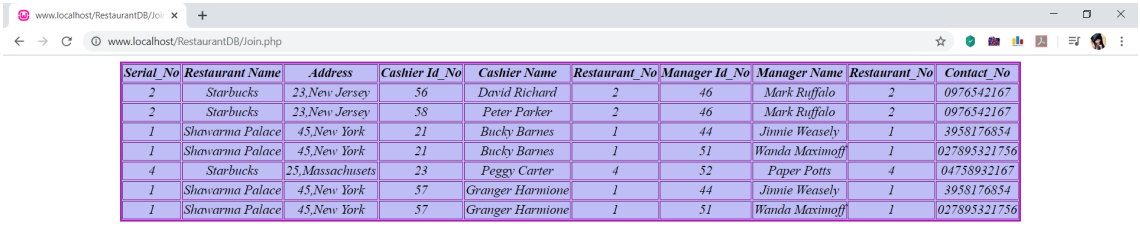
7.4 Fig 4: Save and Display of A Table(Browser)



7.5 Fig 5: Join Operation in 3 Tables(php)

```php
<?php
  $con=mysqli_connect("localhost","root","","restaurant");
  $disp="select Restaurant.Serial_No,Restaurant.Name as RName,Restaurant.Address,
  Cashier.Id_No as CID,Cashier.Name as CName,Cashier.Restaurant_No,Manager.Id_No as MID,Manager.Name as MName,Manager.Restaurant_No,
  Manager.Contact_No from Restaurant inner join Cashier on
  Restaurant.Serial_No=Cashier.Restaurant_No inner join Manager on Restaurant.Serial_No=Manager.Restaurant_No";
    $result=mysqli_query($con,$disp);
    echo '<table border=10 align="center" style="border:2px solid #a91cb0; background-color: #bebdf5; font-style: italic; text-align:center;font-size:18;">';
      echo '<tr><th>Serial_No</th><th>Restaurant Name</th><th>Address</th><th>Cashier Id_No</th><th>Cashier Name</th>
      <th>Restaurant_No</th><th>Manager Id_No</th><th>Manager Name</th><th>Restaurant_No</th><th>Contact_No</th></tr>';

      while($row=mysqli_fetch_array($result))
      {
        echo'<tr>';
          echo '<td>'.$row['Serial_No'].'</td>';
          echo '<td>'.$row['RName'].'</td>';
          echo '<td>'.$row['Address'].'</td>';
          echo '<td>'.$row['CID'].'</td>';
          echo '<td>'.$row['CName'].'</td>';
          echo '<td>'.$row['Restaurant_No'].'</td>';
          echo '<td>'.$row['MID'].'</td>';
          echo '<td>'.$row['MName'].'</td>';
          echo '<td>'.$row['Restaurant_No'].'</td>';
          echo '<td>'.$row['Contact_No'].'</td>';
        echo'</tr>';
      }

    echo '</table>';

  mysqli_close($con);
?>
```

7.6 Fig 6: Join Operation in 3 Tables(Browser)



Serial_No	Restaurant Name	Address	Cashier Id_No	Cashier Name	Restaurant_No	Manager Id_No	Manager Name	Restaurant_No	Contact_No
2	Starbucks	23,New Jersey	56	David Richard	2	46	Mark Ruffalo	2	0976542167
2	Starbucks	23,New Jersey	58	Peter Parker	2	46	Mark Ruffalo	2	0976542167
1	Shawarma Palace	45,New York	21	Bucky Barnes	1	44	Jimmie Weasely	1	3958176854
1	Shawarma Palace	45,New York	21	Bucky Barnes	1	51	Wanda Maximoff	1	027895321756
4	Starbucks	25,Massachusets	23	Peggy Carter	4	52	Paper Potts	4	04758932167
1	Shawarma Palace	45,New York	57	Granger Harmione	1	44	Jimmie Weasely	1	3958176854
1	Shawarma Palace	45,New York	57	Granger Harmione	1	51	Wanda Maximoff	1	027895321756

8 Conclusion

This system holds the data of employees and customers. When any entity needs to be modified, it can be easily done here. Natural join and other basic operations can be applied here.