

CS 387 Project - Restaurant Management System

Project Design document

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a)TABLES:

- 1)item(item_id,item_name,cost,qua_inv,unit)
- 2)dish(dish_id,dish_name,recipe,time_taken,dish_type,cost,rating,photo)
- 3)dish_items(dish_id,item_id,quantity)
- 4)area(area_id,loc,city)
- 5)customer_type(c_type_id,c_type,min_num_dishes,max_num_dishes)
- 6)customer(c_id,name,username,pswd,ph_no,addr,num_orders,num_dish)
- 7)cart(c_id,dish_id,quantity)
- 8)employee(e_id,name,username,pswd,salary,ph_no,addr,e_type,join_date,status,left_dateprim_area_id,sec_area_id)
- 9)offer(offer_id,name,discount)
- 10)day(dat,day)
- 11)offer_valid(offer_id,dat,dish_id,c_type_id)
- 12)day_to_day_dishes(dat,dish_id,dish_count)
- 13)day_to_day_items(dat,item_id,used,bought,left_inv)
- 14)orders(order_id,c_id,area_id,table_id,dat,received_time,finished_time,delivered_time,deliver_person,status,order_type)
- 15)order_dishes(order_id,dish_id,quantity,offer_id)
- 16)table_status(table_id,loc,status)

There are no functional dependencies in our shema. Hence it is 3NF form.

b)INTEGRITY CONSTRAINTS:

1)item:

primary key(item_id)

2)dish:

primary key(dish_id)
dish_type in ('Veg Starter','Nog-Veg Starter','Veg Main','Non-Veg Main','Deserts')

3)dish_items:

Primary key(dish_id,item_id)
Foreign key(dish_id) references dish
Foreign key(item_id) references item

4)area:

Primary key(area_id)

5)table_status:

Primary key(table_id)
Status in ('O','E') - 'O' is for Occupied and 'E' is for Empty

6)customer_type:

Primary key(c_type_id)
C_type in ('Platinum','Gold','Silver','Normal')

7)customer:

Primary key(c_id)
unique(username) - each customer should have unique username
Username not null
Pswd not null

8)cart:

Primary key(c_id,dish_id)
Foreign key(c_id) references customer
Foreign key(dish_id) references dish

9)employee:

Primary key(e_id)
unique(username) - each employee should have unique username

Username not null
Pswd not null
E_type in ('Chef','Waiter','Head Waiter','Delivery','Manager')
Status in ('Working','Leave','Left')
Foreign key(prim_area_id) references **area**
Foreign key(sec_area_id) references **area**

10)offer:

Primary key(offer_id)

11)day:

Primary key(dat)
Day in ('Mon','Tue','Wed','Thu','Fri','Sat','Sun')

12)offer_valid:

Unique(offer_id,dat,dish_id,c_type_id)
Foreign key(offer_id) references **offer**
Foreign key(dat) references **day** - Can be null, null value means that this offer is valid on all days
Foreign key(dish_id) references **dish** - Can be null, that means offer is valid for all dishes
Foreign key(c_type_id) references **customer_type** - Can be null, that means offer is valid for all customer types
offer_id not null

13)day_to_day_dishes:

Primary key(dat,dish_id)
Foreign key(dat) references **day**
Foreign key(dish_id) references **dish**

14)day_to_day_items:

Primary key(dat,item_id)
Foreign key(dat) references **day**
Foreign key(item_id) references **item**

15)orders:

Primary key(order_id)
Foreign key(c_id) references **customer**
Foreign key(area_id) references **area** - null value means it's a Dine-in order
Foreign key(delivery_person) references **employee** - null value means it's a Dine-in order
Foreign key(table_id) references **table_status** - null value means it's a Dine-in order
Foreign key(dat) references **day**
Status in ('Preparing','Out for delivery','Delivered','Served')
Order_type in ('Online','Dine')
Dat not null

16)order_dishes:

Primary key(order_id,dish_id)
Foreign key(order_id) references **orders**
Foreign key(dish_id) references **dish**
Foreign key(offer_id) references **offer** - null value means no offer was applicable

c)Not using any views.

e)Our DDL file and files for inserting Data are in the following drive link:

<https://drive.google.com/drive/folders/1HdnO0YS0Dhby2dRFf5YNT0XBc3hZKFU-?usp=sharing>

d,f) Transactions in DB for each use case and the corresponding SQL query

For Everyone:-

Use Case : Login

- 1. If the role is Customer then we search for the corresponding row in the customer table -

SELECT * FROM customer where username = u_name and pswd = pwd
- 2. If the role is any other then we search for the corresponding row in the employee table -

SELECT * FROM employee where username = u_name and pswd = pwd

For Owners:-

Managing Employees -

Use Case: View Employee details

- 1. Query all existing employee records's name

SELECT * from employee
- 2. Return details of a single selected employee

SELECT * from employee where e_id= employee_id

Use Case: Delete Employee details

- 1. Delete employee record details from the table

DELETE FROM employee WHERE e_id =employee_id

Use Case: Edit Employee details

- 2. Edit employee record details from the table
UPDATE employee SET status=new_state where e_id = employee_id

Use Case: Add Employee details

- 1. Add a new entry into the employee table

INSERT INTO employee
VALUES (name, salary, ph_no, addr, username, pswd, e_type, join_date, status, left_date, prim_area_id, sec_area_id)

Managing Dishes -

Use Case: View Dish details or Menu

- 1. Query all records' names from the dish table
SELECT * from dish
- 2. Return details of a selected dish
SELECT * from dish where dish_id = dish_id

Use Case: Delete dish

- 1. Remove the particular dish record from database
DELETE FROM dish WHERE dish_id = dish_id;
DELETE FROM dish_items WHERE dish_id = dish_id;

Use Case: Add Dish details

- 1. Insert a new entry to the dishes table
INSERT INTO dish VALUES (dish_id, dish_name, recipe, time_taken, dish_type, cost, rating, photo);
INSERT INTO dish_items VALUES (dish_id, item_id, quantity);

Restaurant Details

Use Case: View and edit Restaurant details

1. These details will be stored as a JSON file.

Managing Items

Use Case: View Item details

1. Query all item names from the item table.
SELECT * from item;
2. Query a particular item record from the item table.
SELECT * from item WHERE item_id = item_id;

Use Case: View Items purchased and used up on that day

1. Fetch all items from day-to-day-items relation.
SELECT * from day_to_day_items where day = d;

Use Case: Update item count in the inventory

1. Update the qua_inv attribute for that item in the item table
UPDATE item SET qua_inv=new_quantity WHERE item_id = item_id;

Managing Tables

Use Case: View Table Status

1. Fetch all tables from the table relation
SELECT * from table_status;
2. Fetch further details about a table from the table relation
SELECT * from table_status where table_id = t_id

Use Case: Edit Table Status

1. Edit the status attribute of a table
UPDATE table_status SET status=new_state WHERE table_id = table_id;

Managing Orders

Use Case: View order history details

1. Fetch all order's details from the orders relation
SELECT * from orders
2. Fetch complete details of a particular order from the orders relation
SELECT * from orders where order_id = order_id

Use Case: Add an order

1. Adds a row to the orders table, adds dishes in the orders to the order_dishes table

INSERT INTO orders
VALUES (c_id, area_id, table_id, dat, received_time, finished_time, delivered_time, delivery_person, status, order_type)

INSERT INTO order_dishes
VALUES (order_id, dish_id, quantity, offer_id)

Manage Customers

Use Case: View customer details

1. Fetch details of all customers from the customers relation
SELECT * from customer
2. Fetch complete details of a particular customer.
SELECT * from customer WHERE c_id = c_id

Use Case: Add a new customer

1. Adding a new row to the customer table
INSERT INTO customer
VALUES (c_id,name,username,pswd,ph_no,addr,0,0)

Use Case: Edit customer details

1. The corresponding row in the customer table is updated
UPDATE customer
SET name=name AND ph_no = ph_no AND addr=addr
WHERE c_id = customer_id

Manage Offers

Use Case: View offer details

1. Fetch all offers from the offers relation
SELECT * from offer
2. Fetch details about a particular offer
SELECT * from offer WHERE offer_id = offer_id

Use Case: Add an offer to the offer table and offer_valid tables

1. A new row is added to the offer table and rows are added to the offer_valid tables
INSERT INTO offer
VALUES (offer_id,name,discount)

INSERT INTO offer_valid
VALUES (offer_id,dat,dish_id,c_type_id)

Manage Delivery People

Use Case: View delivery person details

1. Fetch all delivery person from the employees table / delivery person table
SELECT * from employee where e_type = 'Delivery'

Use Case: Edit delivery person details

1. Change the area codes for a particular Delivery person
UPDATE employee SET prim_area_id=p_id and sec_area_id = s_id WHERE e_id = e_id

For Customers:- (View Menu,

Use Case: View cart and confirm the order

1. Viewing rows corresponding to the customer in the cart table
SELECT * from cart where c_id = c_id;
2. On confirmation, insert a new order into the orders relation. - Already written

Use Case: View previous orders

1. Fetch orders from orders table, filter on a particular customer.
SELECT * from orders where c_id = c_id;
2. Fetch a particular order detail, on selection. - Already written

Use Case: Change account details - Already written

1. Fetch existing account details from Customers table and login table.
2. Modify customer details record in the customers table.

For Chef:-

The relevant subset of Owner use cases - (Manage Dishes,Menu,Recipe of dishes)

For Head Waiter:-

The relevant subset of Owner use cases - (Manage Table Status)

For Inventory Manager :-

The relevant subset of Owner use cases - (Manages inventory of items)

For Billing Manager:-

The relevant subset of Owner use cases - (Managers Orders and Customers)

For Delivery Manager:-

The relevant subset of Owner use cases - (Manages Delivery Persons and Area Codes)

Analytics Use cases

1. best dishes according to user rating

```
SELECT * from dish ORDER BY rating limit 10;
```

2. Most ordered dish

```
Select dish_name from dish, (SELECT dish_id FROM order_dishes GROUP BY dish_id ORDER BY count(*) DESC limit 1) as a where dish.dish_id=a.dish_id;
```

3. Best day with most orders

```
SELECT dat from orders  
GROUP BY dat  
ORDER BY count(*) DESC  
limit 1;
```

4. Most frequent customers

```
SELECT *  
FROM customer,(SELECT c_id,count(*) as freq from orders group by c_id ORDER BY freq desc  
limit 1) as a1  
WHERE a1.c_id = customer.c_id;
```

5. Best delivery person by no.of deliveries

```
select delivery_person,name  
from (SELECT delivery_person,count(*) as num_deliveries from orders where delivery_person is not null group by delivery_person  
order by num_deliveries desc limit 1) as A,employee where A.delivery_person=employee.e_id;
```

I. Business Logic Controller :-

For Everyone:-

Use Case : Login

Users need to sign up at first, before logging into the web app. From next time onwards, they can directly sign in.

For Owners:-

Use Case: View Employee details

All employees previously added via the "Add Employee" option and those already existing in the database will be visible. A particular employee's details can be brought into focus by clicking on it.

Use Case: Delete Employee details

Employee records will be deleted. There is no way to recover these details.

Use Case: Edit Employee details

An existing employee's details such as name, ph.no , job can be edited.

Use Case: Add Employee details

A new employee has to be added to the database using this option. The new employee can have the same name as another employee, since we will have a unique employee ID.

Use Case: View Dish details

All dishes added previously via the "add dish" option and those already present in the database will be displayed. A particular dish can be viewed in focus by clicking on it.

Use Case: Delete dish

This particular dish will be removed from the database. This operation is irreversible.

Use Case: Add Dish details

A new dish is added into the menu using this option. The dish name needs to be unique, to avoid confusion for customers.

Use Case: View and edit Restaurant details

Restaurant details can be edited and saved. We need a photo, address, ph.no and a neat description.

Use Case: View Item details

All items added previously via the "add item" option and those already present in the database will be displayed. A particular item can be viewed in focus by clicking on it.

Use Case: View Items purchased and used up on that day

Items used up will be reflected in the dishes-orders served. Items purchased will be managed by the Inventory Manager.

Use Case: Update item count in the inventory

Item count will be updated in the database. This has to reflect the orders placed and inventory bought.

Use Case: View Table Status

The status will be free/occupied/reserved.

Use Case: Edit table status

Can update the status of tables. Free tables can be made busy/reserved. Busy table can be freed.

Use Case: View order history details

All previous orders are displayed. Click on a particular order to view it in focus.

Use Case: Add an order

Create an order manually after taking orders from dine-in customers. Online customers will place orders under their own name.

Use Case: View customer details

All current customers are displayed. Click on a particular customer to view them in focus.

Use Case: Add a new customer

This option is used to register new customers offline.

Use Case: Edit customer details

This option is used to edit details offline.

Use Case: View offer details

All current offers are displayed. Offers typically allot discounts on total bill.

Use Case: View delivery person details

Delivery persons details are displayed. Emphasis is kept on whether they are free or currently doing a delivery.

For Customers:-

Use Case: View menu and select items

All items are displayed to the user. They can select a particular item for ordering.

Use Case: View cart and confirm the order

After viewing their items again in the cart, they can apply for an offer and confirm their order.

Use Case: View previous orders

All previous orders of that user are visible. Clicking on a particular order will open it in focus.

Use Case: Change account details

Users can change their details like name, phone no., Address etc.

For Chef:-

The relevant subset of Owner use cases - (Manage Dishes,Menu,Recipe of dishes)

For Head Waiter:-

The relevant subset of Owner use cases - (Manage Table Status, Manage Waiters)

For Inventory Manager :-

The relevant subset of Owner use cases - (Manages inventory of items)

Use case : Update about items

Details about how much of which item was bought will be updated here. This will also update the attributes of that item in the Items relation.

For Billing Manager:-

The relevant subset of Owner use cases - (Managers Orders and Customers)

For Delivery Manager:-

The relevant subset of Owner use cases - (Manages Delivery Persons and Area Codes)

Use Case: Assign a delivery person

Delivery manager will assign a delivery person to make a delivery to an online customer. Manager needs to take care of assigning the right delivery location to that delivery person.

H. User forms :

Login Page

Username

Password

Role

Dropdown

Login

New Customer?

New Customer

Username:

Password:

Name:

Phone No:

Address:

Submit

Login Page

Customer Home page

New OrderCartPrev OrdersMy Details

Dish TypeDropdown

List of dishes

Photo

Dish Name

Cost

Offer

-0+

Photo

Dish Name

Cost

Offer

-0+

Photo

Dish Name

Cost

Offer

-0+

Cart

Dishes in cart

Photo

Dish Name

Cost

Offer

-0+

Photo

Dish Name

Cost

Offer

-0+

Total Cost

Delivery Charges

Offer

Final Amount

Pay

Cusomter Details

Username:

Name:

Ph. No:

Address:

Type:

No. of orders:

No. of dishes:

Edit Details

change password

Dish Name

Photo

Name :

Ingredients:

Cost:

Rating:

Offer:

-

0

+

Previous Orders

List of orders

Order #

Dishes in Order

Photo	Dish Name	Cost	Offer	-	0	+
-------	-----------	------	-------	---	---	---

Photo	Dish Name	Cost	Offer	-	0	+
-------	-----------	------	-------	---	---	---

Total Cost	<input type="text"/>	Delivery Charges	<input type="text"/>
------------	----------------------	------------------	----------------------

Offer	<input type="text"/>	Final Amount	<input type="text"/>
-------	----------------------	--------------	----------------------

Delivery Time	<input type="text"/>
---------------	----------------------

Delivered By	<input type="text"/>
--------------	----------------------

Employees Page

List of Employees

ID	Name	Role	Edit	Remove
ID	Name	Role	Edit	Remove

Add Employee

Add Employee Page

Username:	<input type="text"/>	Address:	<input type="text"/>	Primary Delivery Area	<input type="text"/>
Name:	<input type="text"/>	Role:	<input type="text"/>	Secondary Delivery Area	<input type="text"/>
Ph. No:	<input type="text"/>	Pwd:	<input type="text"/>		

Add

Edit Employee Page

Username:	<input type="text" value="old username"/>	Address:	<input type="text" value="old address"/>
Name:	<input type="text" value="old name"/>	Role:	<input type="text" value="old role"/>
Ph. No:	<input type="text" value="old ph.no"/>	Pwd:	<input type="text" value="old pwd"/>
status:	<input type="text" value="Working"/>		

Edit

Dishes Page

Menu

Photo

Dish Name

Type

Edit

Remove

Photo

Dish Name

Type

Edit

Remove

Add Dish

Add Dish Page

Photo

Name :

Ingredients:

Recipe:

Type:

Time Taken:

Add

Edit Dish Page

Photo

Name :

Ingredients:

Recipe:

Type:

Time Taken:

old name

old ingridents

old recipe

old type

old time

Edit

Items

Bought

Name

Cost

quantity

Edit

Remove

-

0

+

Name

Cost

quantity

Edit

Remove

-

0

+

Add Item

Add Item Page

Name :

Cost

Quantity

Unit

Add

Edit Item Page

Name :

old name

Cost

old cost

Edit

Offers Page

Offer Name	Discount	Edit	Remove
Offer Name	Discount	Edit	Remove
Add Offer			

Add Offer

Name:

Discount:

Dates:

-

date

+

Dishes:

-

dish

+

Add

Edit Offer

Name:

name

Discount:

percentage

Dates:

-

dates

+

Dishes:

-

dishes

+

Save

Per Day Page

Date:

Items List

Item	Used Count	Bought Count
------	------------	--------------

Dishes List

Dish	Count
------	-------

Sales Made	<input type="text"/>
Amount Spent	<input type="text"/>
Net Profit	<input type="text"/>

Customers Page

Username

Name

Ph.No

Type

Username

Name

Ph.No

Type

Add Customer

Tables Page

ID

Location

Status Dropdown

Update Status

ID

Location

Status Dropdown

Update Status

Add Table

Add Table Page

Location

Add

Orders Page

Date

Customer Name

Order Type

Bill

status

Date

Customer Name

Order Type

Bill

status

Add Order

Add Order Page

Customer:

Order Type:

Dishes:

-

dish,quantity

+

Place Order

Analytics Page

Best Dish by ratings:

Best Dish by no. of orders:

Most often visiting cutomers:

Best delivery boy by no. of deliveries:

Most used type of order:

Delivery People Page

List of People

ID	Name	Primary Area	Secondary Area	Edit	Remove
ID	Name	Primary Area	Secondary Area	Edit	Remove

Delivery Person Page

Current Order Details

Date	Customer	Order ID	Bill	Address
------	----------	----------	------	---------

Out for delivery

Delivered