

CENG 315 - PROJECT DESIGN REPORT

GROUP 1

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RESTAURANT MANAGEMENT DATABASE SYSTEM

User Story

In our restaurants, there are two types of ordering. One of them is online order, the other one is dine-in. In the online order, we keep the data about customer information and order. After that, the order preparation process starts. When the order is ready, our employee which is courier takes the order and carries to the customer. In the dine-in part, the customer can reserve a table with an employee or, if available, directly dine-in, in the dine-in section we don't collect data about the customer. When a customer sits at the table, the waiter marks the table as unavailable, we match the customer with the table number in the dine-in section. After that, customers give an order according to the menu which is listed version of products__. On the menu, there are several foods and drinks. Customers give orders to the waiter. The waiter takes the order, records and sends them to the kitchen section. When orders arrive in the kitchen, our chefs take the order and get necessary elements from the storage and prepare the food. There are several staff who help the chefs. When an order is prepared, runners take them and carry them into the customer table and waiters serve it to the customer. Our waiter can know the status of the order anytime. After the customer eats his/her meal, the payment section is started. We have a cashier that keeps the record of the payment taken. When a customer pays the bill, the cashier asks him/her about payload type, discount ticket, tip (if customer wants). After that, the cashier tells the total bill to the customer. When the meal is finished and the customer pays the bill, status is still unavailable until the busser cleans the table. If we talk about our employees, we have several types of employees that are head manager, assistant manager, waiter, runner, cashier, head chef, sous chef, line cooks, prep cooks, dishwasher, maintenance cleaning stuff and delivery stuff. We keep our employee's data. In the inventory department, they keep the stock of ingredients. The manager keeps track of the maintenance of the restaurant.

Users:

- Manager
- Waiter
- Cashier
- Courier
- Chef

Assumptions:

- Customer can make a reservation to the restaurant.
- Employee can have bonus salary.
- Manager can see how many hours an employee works.
- Manager can calculate total income and outcome.
- Customer can give specifications in the order.
- Customer can eat in the restaurant even if they don't have a reservation.
- The supplier should inform the Inventory Chief about the prices of the elements.
- Users can keep track of delivery status of orders.
- Manager can keep track of favorite products.
- Manager can update the capacity of the favorite dine-in area.
- Manager can work in only one restaurant.

Business Rules:

- The restaurant is open between 10 a.m — 00.p.m.
- Tip amount must be greater than \$5.
- Minimum wage is \$1500.
- At least %35 of employees must be women.

- Online orders can cancel in 30 minutes.
- Reservation can cancel until 1 hour left.
- The restaurant matches the customer with a table in the dine-in section for customers who don't have a reservation.
- The restaurant collects necessary data in online orders and reservations.

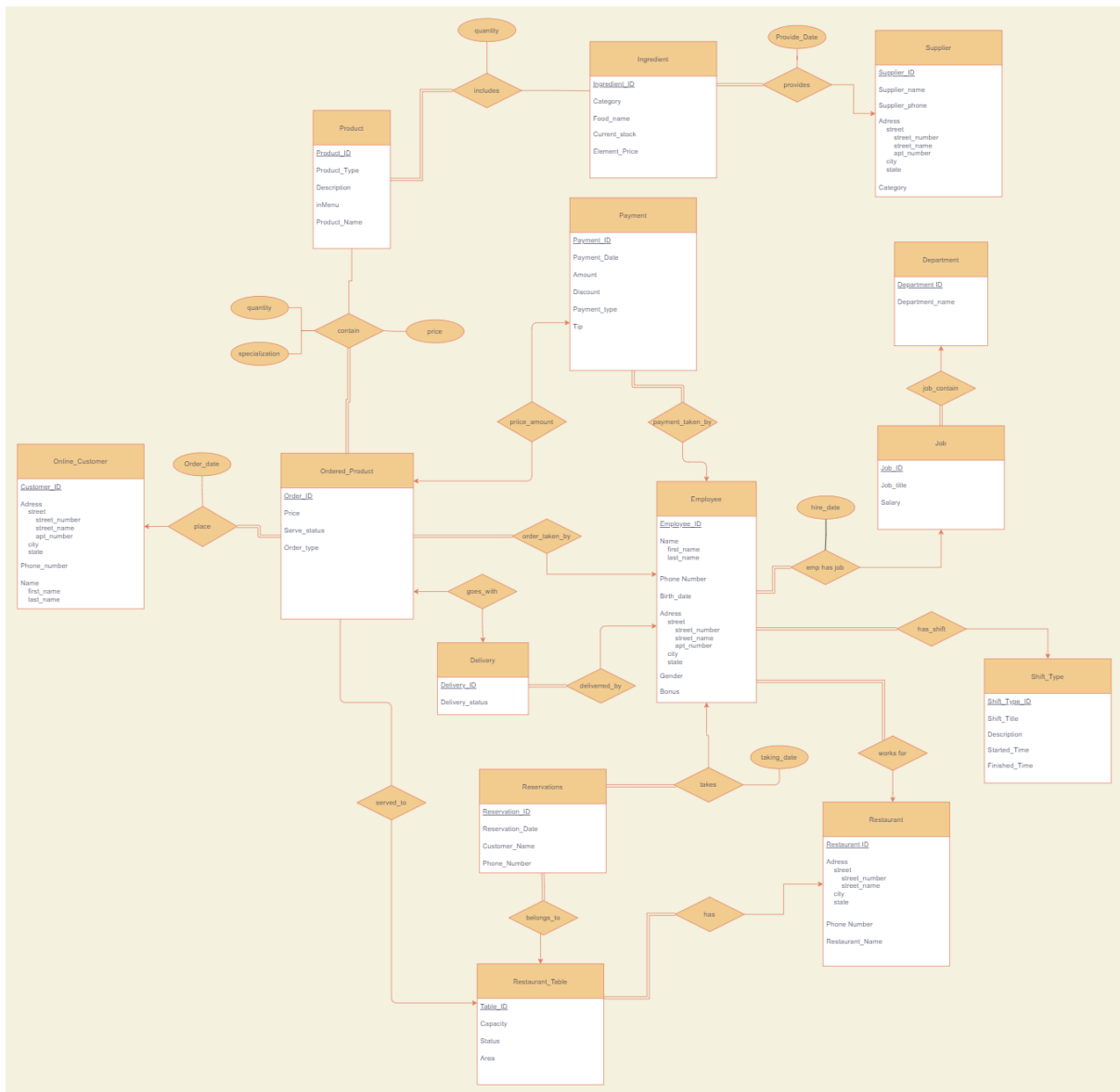
Entity Sets

- Restaurant: (Restaurant_ID, Location, Phone_Number, Manager_ID, Name)
- Table: (Table_ID, Capacity, Status, Area)
- Online_Customer: (Customer_ID, Street_Number, Street_Name, Apt_Number, City, State, Phone_Number, First_Name, Last_Name)
- Payment: (Payment_ID, Date, Amount, Discount, Payment_Type, Tip)
- Order: (Order_ID, Price, Serve_Status, Order_Type)
- Delivery: (Delivery_ID, Delivery_Status)
- Product: (Product_ID, Type, Description, In_Menu, Name)
- Element: (Element_ID, Category, Food_Name, Current_Stock, Element_Price)
- Supplier: (Supplier_ID, Supplier_Name, Supplier_Phone, Street_Number, Street_Name, Apt_Number, City, State, Category)
- Employee: (Employee_ID, First_Name, Last_Name, Phone_Number, Birth_Date, Street_Number, Street_Name, Apt_Number, City, State, Gender, Bonus)
- Job: (Job_ID, Job_Title, Salary)
- Department: (Department_ID, Department_Name)
- Shift_Type: (Shift_Type_ID, Shift_Title, Description, Started_Time, Finished_Time)
- Reservation: (Reservation_ID, Reservation_Date, Name, Phone_Number)

Relationship Sets

- Provides: (Element_ID, Supplier_ID, Date)
- Includes: (Element_ID, Product_ID, Quantity)
- Contain: (Product_ID, Order_ID, Quantity, Specialization, Price)
- Price_Amount: (Payment_ID, Order_ID)
- Order_Taken_By: (Employee_ID, Order_ID)
- Goes_With: (Delivery_ID, Order_ID)
- Delivered_By: (Delivery_ID, Employee_ID)
- Place: (Customer_ID, Order_ID, Order_Date)
- Served_To: (Table_ID, Order_ID)
- Has: (Table_ID, Restaurant_ID)
- Works_For: (Restaurant_ID, Employee_ID)
- Emp_Has_Job: (Job_ID, Employee_ID, Hire_Date)
- Job_Contain: (Department_ID, Job_ID)
- Has_Shift: (Employee_ID, Shift_Type_ID)
- Payment_Taken_By: (Payment_ID, Employee_ID)
- Belongs_To: (Reservation_ID, Table_ID)
- Takes: (Reservation_ID, Employee_ID, Takes_Date)

ER Diagram



ER Diagram to Relational Schema

During the conversion process of ERD to Relational Schema, we apply the rule of Redundancy of Schemas to our diagram. Our entity and relationship sets are updated as follows:

Entity Sets

- Restaurant: (Restaurant_ID, Street_Number, Street_Name, City, State, Phone_Number, Restaurant_Name)
- Restaurant_Table: (Table_ID, Capacity, Status, Area, Restaurant_ID)
- Online_Customer: (Customer_ID, Street_Number, Street_Name, Apt_Number, City, State, Phone_Number, First_Name, Last_Name)
- Payment: (Payment_ID, Payment_Date, Amount, Discount, Payment_Type, Tip, Order_ID, Employee_ID)
- Ordered_Product: (Order_ID, Price, Serve_Status, Order_Type, Employee_ID, Customer_ID, Order_Date)
- Delivery: (Delivery_ID, Delivery_Status, Order_ID, Employee_ID)
- Product: (Product_ID, Product_Type, Description, In_Menu, Product_Name)
- Ingredient: (Ingredient_ID, Category, Food_Name, Current_Stock, Ingredient_Price, Supplier_ID, Provide_Date)
- Supplier: (Supplier_ID, Supplier_Name, Supplier_Phone, Street_Number, Street_Name, Apt_Number, City, State, Category)
- Employee: (Employee_ID, First_Name, Last_Name, Phone_Number, Birth_Date, Street_Number, Street_Name, Apt_Number, City, State, Gender, Bonus, Restaurant_ID, Job_ID, Hire_Date, Shift_Type_ID)
- Job: (Job_ID, Job_Title, Salary, Department_ID)
- Department: (Department_ID, Department_Name)
- Shift_Type: (Shift_Type_ID, Shift_Title, Description, Started_Time, Finished_Time)
- Reservation: (Reservation_ID, Reservation_Date, Customer_Name, Phone_Number, Table_ID, Employee_ID, Taking_Date)

Relationship Sets

- ~~Provides: (Element_ID, Supplier_ID, Provide_Date)~~
- Includes: (Ingredient_ID, Product_ID, Quantity)
- Contain: (Product_ID, Order_ID, Quantity, Specialization, Price)
- ~~Price_Amount: (Payment_ID, Order_ID)~~
- ~~Order_Taken_By: (Employee_ID, Order_ID)~~
- ~~Goes_With: (Delivery_ID, Order_ID)~~
- ~~Delivered_By: (Delivery_ID, Employee_ID)~~
- ~~Place: (Customer_ID, Order_ID, Order_Date)~~
- Served_To: (Table_ID, Order_ID)
- ~~Has: (Table_ID, Restaurant_ID)~~
- ~~Works_For: (Restaurant_ID, Employee_ID)~~
- ~~Emp_Has_Job: (Job_ID, Employee_ID, Hire_Date)~~
- ~~Job_Contain: (Department_ID, Job_ID)~~
- ~~Has_Shift: (Employee_ID, Shift_Type_ID)~~
- ~~Payment_Taken_By: (Payment_ID, Employee_ID)~~
- ~~Belongs_To: (Reservation_ID, Table_ID)~~
- ~~Takes: (Reservation_ID, Employee_ID, Taking_Date)~~