

A DBMS Solution for Catering in Colleges

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Problem Statement

We provide a solution to the woes of the people in IIT. The current system includes a tedious task of verifying individual QR codes. Our system proposes a method to turn it into transactions through the SmartCards, and hence in our solution, we make a PWA (Progressive Web Application), and change the payment method to SmartCards.

Web-app features

- Tell the user about upcoming meals.
 - What all the meal contains.
 - Meal price
 - Meal rating
- Show meal history.
 - All the meals the user has had.
 - And how much it cost him/her.
- Subscriptions.
 - Show the diner all of his/hers subscriptions with the corresponding caterers.
- Reviews.
 - Every diner has the facility to rate the meal, they can see the rating of a meal with

Payment

- Payment Device
 - Will use the SmartCard to make a transaction. It will also provide the time and the caterer.

Caterer

- Billing
 - We will provide the relevant transactions to the caterer.
 - He will deduct money monthly.
 - He will be able to see which meals are popular and how many people have them.
 - We also provide a price calculator which allow them to fix prices for meals.

User prerequisites

Every student has to register with the system in order to be eligible to dine at the mess. As a user registers, he/she provides -

- Name
- Date of birth
- Year
- Course (B.Tech/M.Tech/PhD/Guests)

- Subscription (Monthly/Daily/Semester)
- Email ID
- Phone numbers

What the user wants

- Every time a diner goes to eat, they walk in and press their Smart card against the reader.
- The computer automatically detects the right amount, and it checks the following -
 - If the person has already had the meal today.
 - Their balance is enough.
 - What Subscription are they on.
- And then, on successful verification of the diner, the transaction is recorded, with instant calculation of the price.

Caterer prerequisites

- Every caterer has to register to the system and will obtain a unique CatererID.
- Then the caterer has to opt for the plans to be made available for subscription to the diners, along with the price details.
- The caterer then, has to list out the products, that will be available to be served, and hence, update the menu.
- The caterer will also notify about the timings at which the diners can avail the dining facilities.

What the caterer wants

- The caterer will have the access to the transactions made every time a diner avails the facility.
- The caterer is privileged with the facility of changing the pricing scheme, along with surge pricing.
- A caterer can also update the menu.

App Features

- Balance
- Menu
- How much you have paid.
- How many people are currently in the mess (tentatively).
- They get a notification on the app whenever they make a transaction.
- They are allowed to rate and review a meal.
- They can also know the average rating of the meal before they even leave for it.
- It also shows the number of transactions made with each caterer, on an average basis (monthly), and hence, know which caterer is serving better. Similar stats and analytics will be displayed on the app.

Identifying constraints

- The Caterer can only append to the tables, but can't delete the previously existing entries. (Serving), This will allow us to show which serving was eaten even after the Menu changes.
- We will also calculate and insert price with the a transaction so that we don't have errors when the caterer updates the prices, later on.
- Serving will allow us to rate a dish by a caterer.
- We will allow a person to have just one meal from a caterer at a time (no double dinners.)

Entities

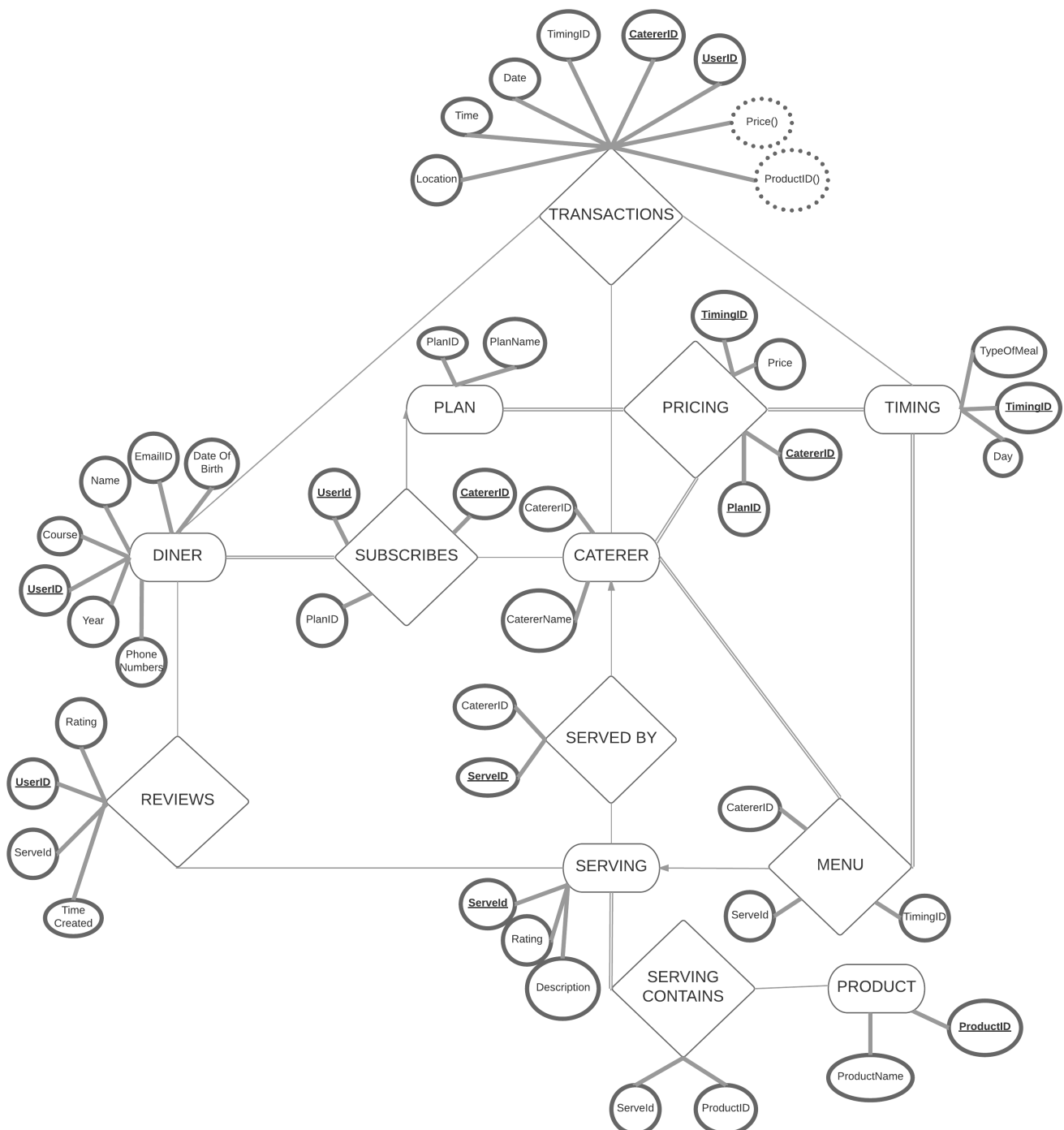
- Diner
- Plan
- Caterer
- Product

- Serving
- Timing

Relations

- ServedBy (Serving and caterer)
- ServingContains (Serving and Products)
- Reviews (Diner and Serving)
- Subscribes (Diner, Plan and Caterer)
- Menu (Timing and Serving)
- Pricing (Caterer , Timing and Plan)
- Transaction (Diner ,Caterer and Timing)

The ER Diagram



Tables

- Diner(UserID, Name, DOB, Year, Course, EmailID, PhoneNo.)
- Plan (PlanID, PlanName)
- Caterer (CatererID, CatererName)
- Product (ProductID,ProductName, Price)
- Serving (ServeID, CatererID, Description, Rating)
- ServingContains(ServeID, ProductID)
- Timing (TimingID,Day,TypeOfMeal)
- Subscribes (UserID,CatererID, PlanID)
- Reviews (ReviewID, ServeID, UserID , Rating, TimeCreated)
- Menu (TimingID,ServeID)
- Pricing (CatererID,PlanID,TimingID, Price)
- Transaction (UserID,CatererID,TimingID, Date , Time, Location, ServeID, Price)

Functional Dependencies

- UserID -> Name, DOB, Year, Course, EmailID, PhoneNo.
- PlanID -> PlanName
- CatererID -> CatererName
- ProductID -> ProductName, Price
- ServeID -> CatererID, Description, Rating
- TimingID -> Day,TypeOfMeal
- UserID,CatererID -> PlanID
- ReviewID -> ServeID, UserID , Rating, TimeCreated
- CatererID,PlanID,TimingID -> Price
- UserID,CatererID,TimingID -> Date , Time, Location, ServeID, Price

Constraints

Foreign Key Dependencies.

- Serving.CatererID references Caterer.CatererID
- ServingContains.ServeID references Serving.ServeID
- ServingContains.ProductID references Product.ProductID
- Subscribes.UserID references Diner.UserID
- Subscribes.CatererID references Caterer.CatererID
- Subscribes.PlanID references Plan.PlanID
- Reviews.UserID references Diner.UserID
- Reviews.ServeID references Serving.ServeID
- Menu.TimingID references Timing.TimingID
- Menu.ServeID references Serving.ServeID
- Pricing.CatererID references Caterer.CatererID
- Pricing.PlanID references Plan.PlanID
- Pricing.TimingID references Timing.TimingID
- Transaction.UserID references Diner.UserID
- Transaction.CatererID references Caterer.CatererID
- Transaction.TimingID references Timing.TimingID
- Transaction.ServeID references Serving.ServeID

Triggers

- We shall calculate price upon insertion of transaction.
- We shall also append the ServingID with the transaction, so that he can see what he eats over time.
- We will check if the Diner's subscription is valid whenever we goes to eat, if not valid deny.