

# # A DBMS Solution for Catering in Colleges

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## # Problem Statement

We provide a solution to the woes of the people in IITI.

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.

## # 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, accordingly.

## **## 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 -
  - \* Their balance is enough.
  - \* What Subscription are they on.
  - \* The diner is then verified, according to the database of the Caterer.
- \* 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 diners avails the facility.
- \* The caterer is privileged with the facility of changing the pricing scheme.
- \* A caterer can also update the menu.

## #### App Features

- \* Menu
- \* How much you have paid.
- \* 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.

## # Identifying constraints

- \* The Caterer can only append to the tables, but can't delete the previously existing entries. 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.
- \* We will allow a person to have just one meal from a caterer at a time ( no double dinners.)

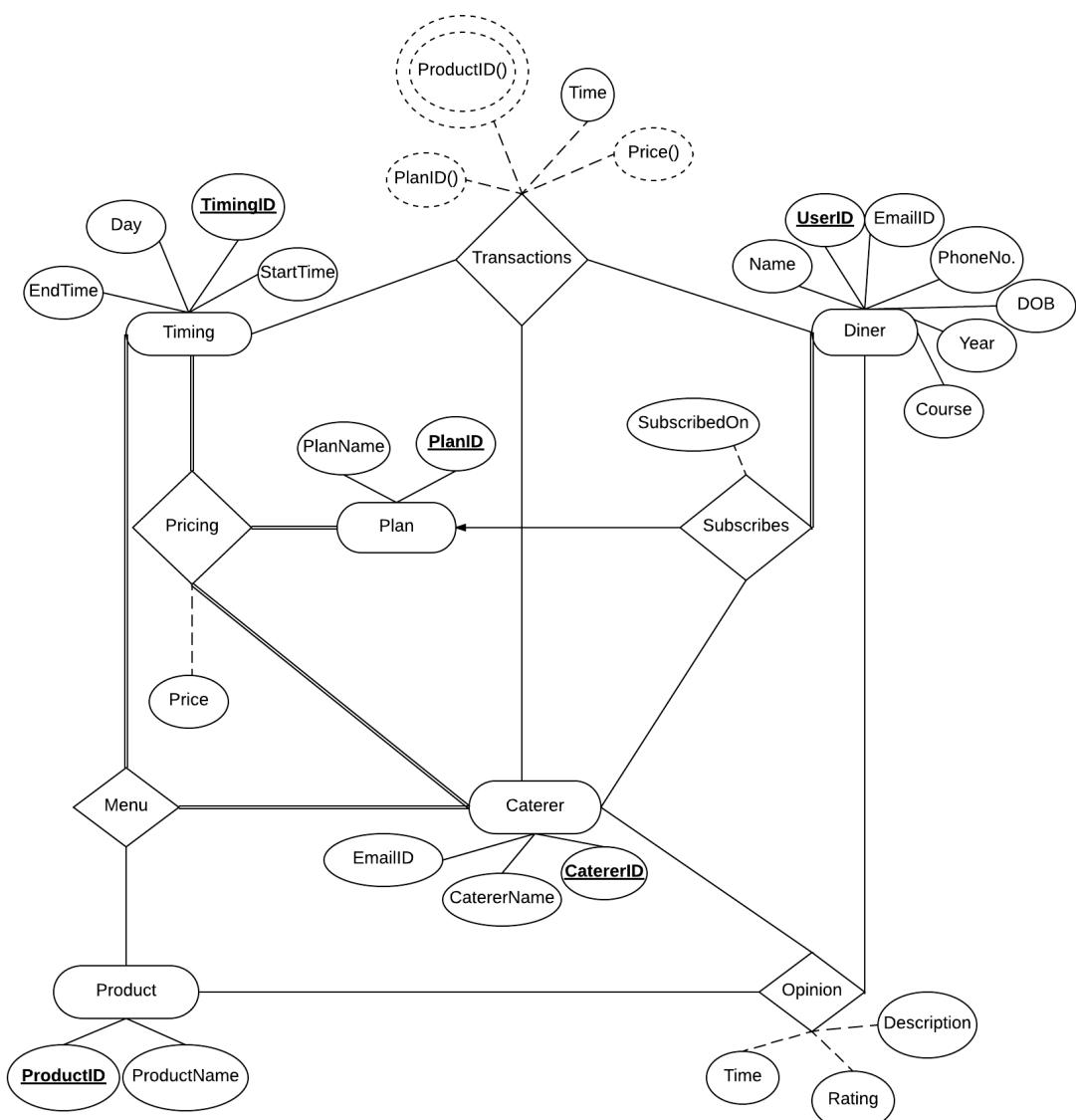
## # Entities

- \* Diner
- \* Plan
- \* Caterer
- \* Product
- \* Timing

## # Relations

- \* Transactions( Diner, Caterer, Timing)
- \* Opinions ( Diner, Caterer , Product)
- \* Subscribes ( Diner, Caterer, Plan)
- \* Menu ( Timing, Caterer, Product)
- \* Pricing ( Timing, Caterer, Plan)

# # The ER Diagram



## # Tables

- \* Diner( <u> UserID </u>, Name, DOB, Year, Course, EmailID, PhoneNo.)
- \* Plan (<u> PlanID </u>, PlanName )
- \* Caterer (<u> CatererID </u>, CatererName, EmailID)
- \* Product (<u> ProductID </u>, ProductName)
- \* Timing (<u> TimingID </u>, Day, StartTime, EndTime)
- \* Subscribes (<u> UserID, CatererID </u>, PlanID, SubscribedOn)
- \* Opinions (<u> ProductID, CatererID, UserID </u>, Rating , Description, Time )
- \* Menu (<u> TimingID, ProductID, CatererID </u>)
- \* Pricing (<u> CatererID, PlanID, TimingID </u>, Price)
- \* Transactions (<u> UserID, CatererID, Time </u>, PlanID(), Price())

## # Constraints

### ### Foreign Key Dependencies

- \* Subscribes.CatererID references Caterer.CatererID
- \* Subscribes.UserID references Diner.UserID
- \* Subscribes.PlanID references Plan.PlanID
  
- \* Opinions.ProductID references Product.ProductID
- \* Opinions.CatererID references Caterer.CatererID
- \* Opinions.UserID references Diner.UserID
  
- \* Menu.CatererID references Caterer.CatererID
- \* Menu.ProductID references Product.ProductID
- \* Menu.TimingID references Timing.TimingID
  
- \* 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

\* Served.TransactionID references Transaction.TransactionID

### ### Primary Key Dependencies

- \* UserID Name -> DOB, Year, Course, EmailID, PhoneNo.
- \* PlanID -> PlanName
- \* CatererID -> CatererName
- \* ProductID -> ProductName
- \* TimingID -> Day
- \* UserID,CatererID -> PlanID, SubscirbedOn
- \* ProductID, CatererID, UserID -> Rating , Description, Time
- \* CatererID,PlanID,TimingID -> Price
- \* UserID,CatererID,Time -> PlanID , Price
- \* TransactionID -> ProductID

## # Creating the Database and the Schemas

### \* Caterer

```
DROP TABLE IF EXISTS `Caterer`;
```

```
CREATE TABLE `Caterer` (
  `CatererID` int(11) NOT NULL AUTO_INCREMENT,
  `CatererName` varchar(32) NOT NULL,
  `EmailID` varchar(30) NOT NULL,
  PRIMARY KEY (`CatererID`),
  UNIQUE KEY `EmailID` (`EmailID`)
) ENGINE=InnoDB AUTO_INCREMENT=2 DEFAULT CHARSET=latin1;
```

### \* Diner

```
DROP TABLE IF EXISTS `Diner`;
```

```
CREATE TABLE `Diner` (
  `FirstName` varchar(20) NOT NULL,
  `LastName` varchar(20) DEFAULT NULL,
  `UserID` int(11) NOT NULL AUTO_INCREMENT,
  `RollNo` int(11) NOT NULL,
  `EmailID` varchar(32) NOT NULL,
  `PhoneNo` int(11) NOT NULL,
  `DOB` date DEFAULT NULL,
  `YearOfStudy` int(11) DEFAULT NULL,
  `Course` varchar(20) NOT NULL,
```

```

`CardDetails` varchar(50) DEFAULT NULL,
PRIMARY KEY (`UserID`),
UNIQUE KEY `CardDetails`(`CardDetails`)
) ENGINE=InnoDB AUTO_INCREMENT=3 DEFAULT CHARSET=latin1;

```

## \* Menu

```

DROP TABLE IF EXISTS `Menu`;
CREATE TABLE `Menu` (
  `TimingID` int(11) NOT NULL,
  `CatererID` int(11) NOT NULL,
  `ProductID` int(11) NOT NULL,
  PRIMARY KEY (`ProductID`,`CatererID`,`TimingID`),
  KEY `TimingID` (`TimingID`),
  KEY `CatererID` (`CatererID`),
  CONSTRAINT `Menu_ibfk_1` FOREIGN KEY (`TimingID`) REFERENCES `Timing`(`TimingID`) ON DELETE CASCADE ON UPDATE CASCADE,
  CONSTRAINT `Menu_ibfk_2` FOREIGN KEY (`CatererID`) REFERENCES `Caterer`(`CatererID`) ON DELETE CASCADE ON UPDATE CASCADE,
  CONSTRAINT `Menu_ibfk_3` FOREIGN KEY (`ProductID`) REFERENCES `Product`(`ProductID`) ON DELETE CASCADE ON UPDATE CASCADE
) ENGINE=InnoDB DEFAULT CHARSET=latin1;

```

## \* Opinion

```

DROP TABLE IF EXISTS `Opinions`;
CREATE TABLE `Opinions` (
  `Description` text,
  `Rating` int(11) DEFAULT NULL,
  `UserID` int(11) NOT NULL,
  `ProductID` int(11) NOT NULL,
  `CatererID` int(11) NOT NULL,
  PRIMARY KEY (`ProductID`,`CatererID`,`UserID`),
  KEY `CatererID` (`CatererID`),
  KEY `UserID` (`UserID`),
  CONSTRAINT `Opinions_ibfk_1` FOREIGN KEY (`CatererID`)
    REFERENCES `Caterer`(`CatererID`) ON DELETE CASCADE ON UPDATE
    CASCADE,
  CONSTRAINT `Opinions_ibfk_2` FOREIGN KEY (`UserID`) REFERENCES `Diner`(`UserID`)
    ON DELETE CASCADE ON UPDATE CASCADE,
  CONSTRAINT `Opinions_ibfk_3` FOREIGN KEY (`ProductID`)
    REFERENCES `Product`(`ProductID`) ON DELETE CASCADE ON UPDATE
    CASCADE
)

```

```
) ENGINE=InnoDB DEFAULT CHARSET=latin1;
```

## \* Plan

```
DROP TABLE IF EXISTS `Plan`;
CREATE TABLE `Plan` (
  `PlanID` int(11) NOT NULL AUTO_INCREMENT,
  `PlanName` varchar(30) NOT NULL,
  `PlanLength` int(11) DEFAULT NULL,
  PRIMARY KEY (`PlanID`)
) ENGINE=InnoDB AUTO_INCREMENT=2 DEFAULT CHARSET=latin1;
```

## \* Pricing

```
DROP TABLE IF EXISTS `Pricing`;
CREATE TABLE `Pricing` (
  `CatererID` int(11) NOT NULL,
  `PlanID` int(11) NOT NULL,
  `TimingID` int(11) NOT NULL,
  `Price` double DEFAULT NULL,
  PRIMARY KEY (`CatererID`,`PlanID`,`TimingID`),
  KEY `PlanID` (`PlanID`),
  KEY `TimingID` (`TimingID`),
  CONSTRAINT `Pricing_ibfk_1` FOREIGN KEY (`CatererID`) REFERENCES `Caterer` (`CatererID`) ON DELETE CASCADE ON UPDATE CASCADE,
  CONSTRAINT `Pricing_ibfk_2` FOREIGN KEY (`PlanID`) REFERENCES `Plan` (`PlanID`) ON DELETE CASCADE ON UPDATE CASCADE,
  CONSTRAINT `Pricing_ibfk_3` FOREIGN KEY (`TimingID`) REFERENCES `Timing` (`TimingID`) ON DELETE CASCADE ON UPDATE CASCADE
) ENGINE=InnoDB DEFAULT CHARSET=latin1;
```

## \* Product

```
DROP TABLE IF EXISTS `Product`;
CREATE TABLE `Product` (
  `ProductID` int(11) NOT NULL AUTO_INCREMENT,
  `ProductName` varchar(32) NOT NULL,
  PRIMARY KEY (`ProductID`)
) ENGINE=InnoDB AUTO_INCREMENT=7 DEFAULT CHARSET=latin1;
```

## \* Subscribes

```
DROP TABLE IF EXISTS `Subscribes`;
CREATE TABLE `Subscribes` (
  `PlanID` int(11) DEFAULT NULL,
  `UserID` int(11) NOT NULL,
  `CatererID` int(11) NOT NULL,
  `SubscribedOn` date DEFAULT NULL,
  PRIMARY KEY (`UserID`,`CatererID`),
  KEY `PlanID` (`PlanID`),
  KEY `CatererID` (`CatererID`),
  CONSTRAINT `Subscribes_ibfk_1` FOREIGN KEY (`PlanID`) REFERENCES `Plan` (`PlanID`) ON DELETE CASCADE ON UPDATE CASCADE,
  CONSTRAINT `Subscribes_ibfk_2` FOREIGN KEY (`CatererID`)
  REFERENCES `Caterer` (`CatererID`) ON DELETE CASCADE ON UPDATE
  CASCADE,
  CONSTRAINT `Subscribes_ibfk_3` FOREIGN KEY (`UserID`) REFERENCES `Diner` (`UserID`) ON DELETE CASCADE ON UPDATE CASCADE
) ENGINE=InnoDB DEFAULT CHARSET=latin1;
```

## \* Timing

```
DROP TABLE IF EXISTS `Timing`;
CREATE TABLE `Timing` (
  `TimingID` int(11) NOT NULL AUTO_INCREMENT,
  `Day` varchar(10) NOT NULL,
  `StartTime` time NOT NULL,
  `EndTime` time NOT NULL,
  PRIMARY KEY (`TimingID`)
) ENGINE=InnoDB AUTO_INCREMENT=6 DEFAULT CHARSET=latin1;
```

## \* Transactions

```
DROP TABLE IF EXISTS `Transactions`;
CREATE TABLE `Transactions` (
  `CatererID` int(11) NOT NULL,
  `UserID` int(11) NOT NULL,
  `Time` time NOT NULL,
  `PlanID` int(11) DEFAULT NULL,
  `Price` double DEFAULT NULL,
  PRIMARY KEY (`CatererID`,`Time`,`UserID`),
  KEY `UserID` (`UserID`),
```

```

CONSTRAINT `Transactions_ibfk_1` FOREIGN KEY (`CatererID`)
REFERENCES `Caterer` (`CatererID`) ON DELETE CASCADE ON UPDATE
CASCADE,
CONSTRAINT `Transactions_ibfk_2` FOREIGN KEY (`UserID`)
REFERENCES `Diner` (`UserID`) ON DELETE CASCADE ON UPDATE
CASCADE
) ENGINE=InnoDB DEFAULT CHARSET=latin1;

```

## # Triggers

```
* CREATE TRIGGER `transaction_values` BEFORE INSERT ON `Transactions`
FOR EACH ROW BEGIN
```

```

DECLARE pid int;
set pid =
(SELECT
    Subscribes.PlanID
FROM
    Subscribes
WHERE
    Subscribes.CatererID = new.CatererID AND
    Subscribes.UserID = new.UserID) ;
SET new.PlanID = pid;

set new.Price =
(SELECT
    Pricing.Price
FROM
    Pricing
WHERE
    Pricing.CatererID = new.CatererID AND
    Pricing.PlanID = pid AND
    Pricing.TimingID = (select
        TimingID
    from
        Timing
    where
        Timing.Day=DAYNAME(cast(new.Time as date)) AND
        Timing.StartTime <= cast(new.Time as time) AND
        Timing.EndTime >= cast(new.Time as time)
));

```

END

- \* We shall calculate price upon insertion of transaction.
- \* We shall also calculate the Plan, the user is subscribed to under the Caterer, which is also fired upon insertion of transaction.

```
* CREATE TRIGGER `update_sub_on` BEFORE INSERT ON `Subscribes`  
FOR EACH ROW  
begin  
    set new.SubscribedOn = NOW();  
end
```

- \* The above trigger automatically updates the Subscribes table by inserting SubscribedOn value as the current date.

## # Features provided by the PWA

### ## Registration

The caterer/diner will register to the database through the registration page. They will enter the details as required, and, hence will be registered to the database through their EmailIDs.

Whether or not, a particular user is subscribed to any caterer, he/she has to register to the database.

### ### Registration For Diner

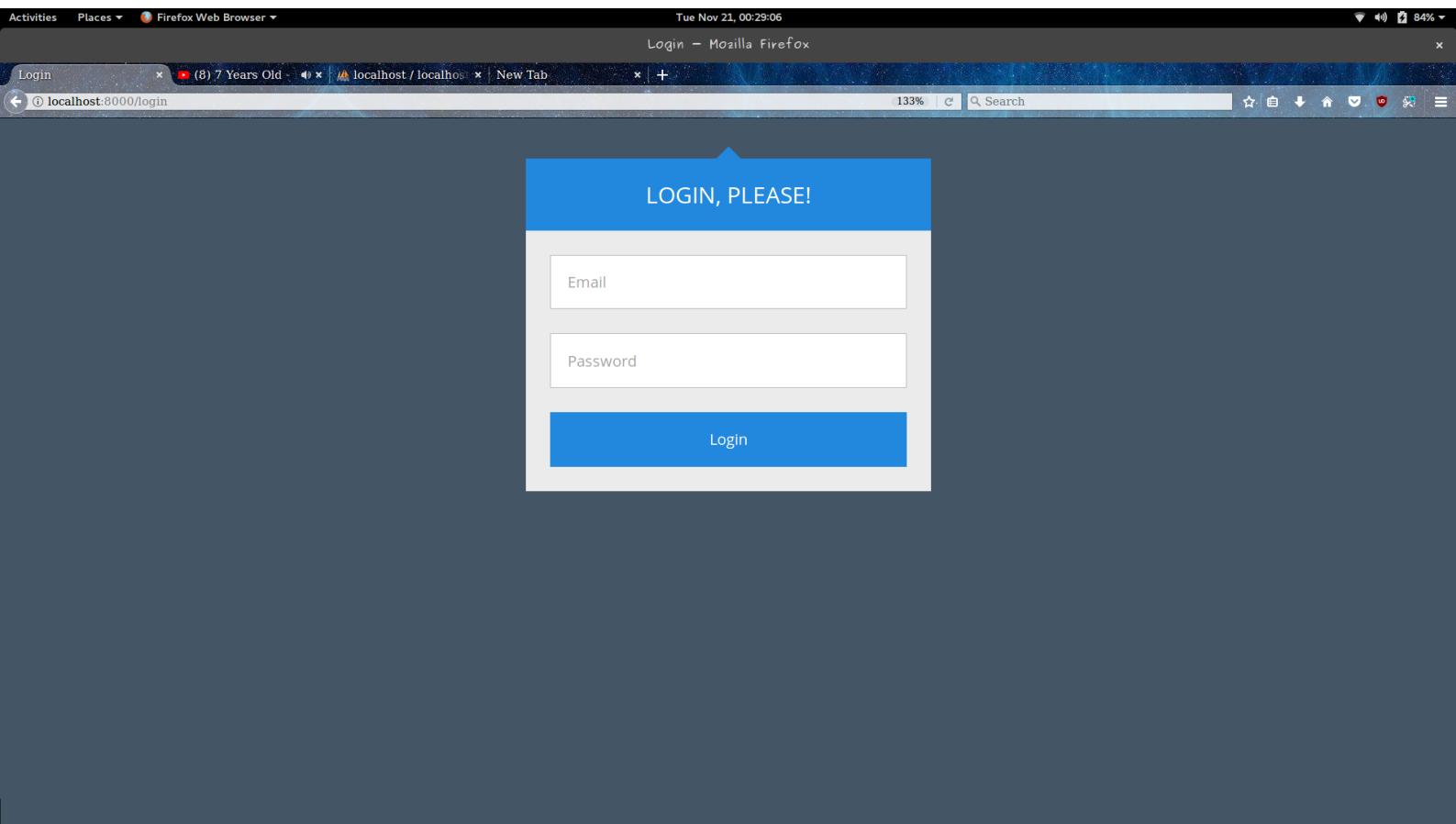
A screenshot of a Firefox browser window titled "Registration - Mozilla Firefox". The address bar shows the URL [localhost:8000/registration/registeruser](http://localhost:8000/registration/registeruser). The page content is a registration form with a blue header bar containing the text "REGISTER, PLEASE!". Below the header are seven input fields: "First Name", "Last Name", "Roll Number", "Email", "Phone Number", "Date Of Birth", and "Year Of Study".

### ### Registration For Caterer

A screenshot of a Firefox browser window titled "Registration - Mozilla Firefox". The address bar shows the URL [localhost:8000/registration/registercaterer](http://localhost:8000/registration/registercaterer). The page content is a registration form with a blue header bar containing the text "REGISTER, PLEASE!". Below the header are four input fields: "Caterer Name", "Email", "Password", and "Password Confirmation". At the bottom of the form is a large blue "Register" button.

## ## Login Page

The Diner and Caterer, both, are required to log in to their accounts by entering the required details on the login page, i.e., their EmailID and Password.



## ## Caterer's DashBoard

The screenshot shows a Firefox browser window titled "HomePage - Mozilla Firefox" with the URL "localhost:8000/caterer/home". The page has a blue header bar with links for "Home", "Verify", "Transactions", "Add a User", and "Logout". Below the header is a vertical stack of five orange rectangular buttons, each containing a white text link: "Manage Subscriptions", "Manage Transactions", "Manage Pricing", "Manage Menu", and "Add a new Product".

Accordingly, the Caterer will perform the desired operations :

### ## Managing the Subscriptions

The Caterer can view all the subscriptions along with their PlanIDs and the Subscription dates on this page.

The screenshot shows a Firefox browser window titled "All Subscriptions - Mozilla Firefox" with the URL "localhost:8000/caterer/subscriptions/view". The page has a blue header bar with links for "Home", "Verify", "Transactions", "Add a User", and "Logout". Below the header is a table with the following data:

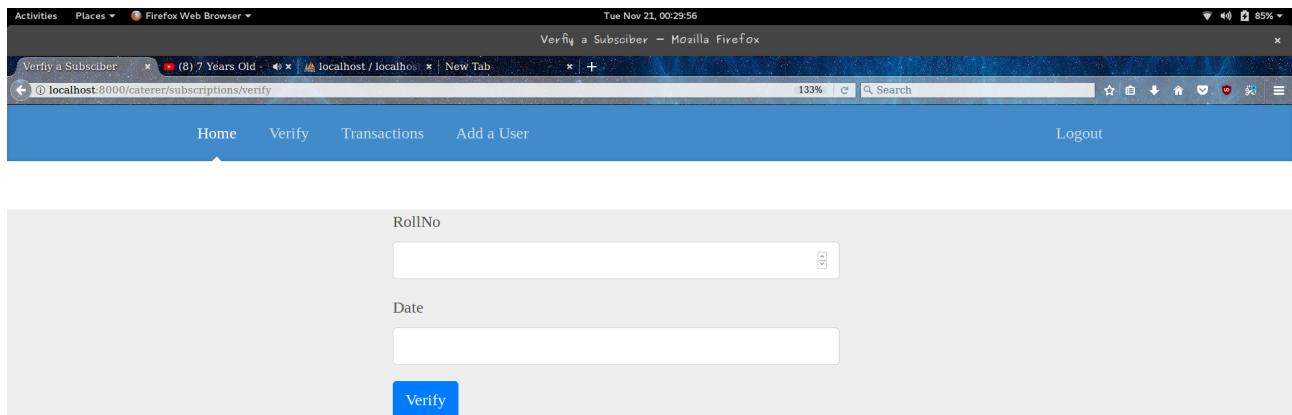
RollNo	CatererID	PlanID
160001001	1	1
160001002	1	1

Subscription Table

RollNo	CatererID	PlanID
160001001	1	1
160001002	1	1

## ## Adding a Subscriber

The Caterer can also add a subscriber to the database ,by entering the required details on this page.



A screenshot of a Firefox browser window. The title bar says "Verify a Subscriber - Mozilla Firefox". The address bar shows "localhost:8000/caterer/subscriptions/verify". The page content area has two input fields: "RollNo" and "Date", and a blue "Verify" button below them.

## ## Managing the Transactions

The Caterer can view all the transactions made,along with the roll numbers of the students,their names,PlanIDs,the price it cost and the time, on this page.



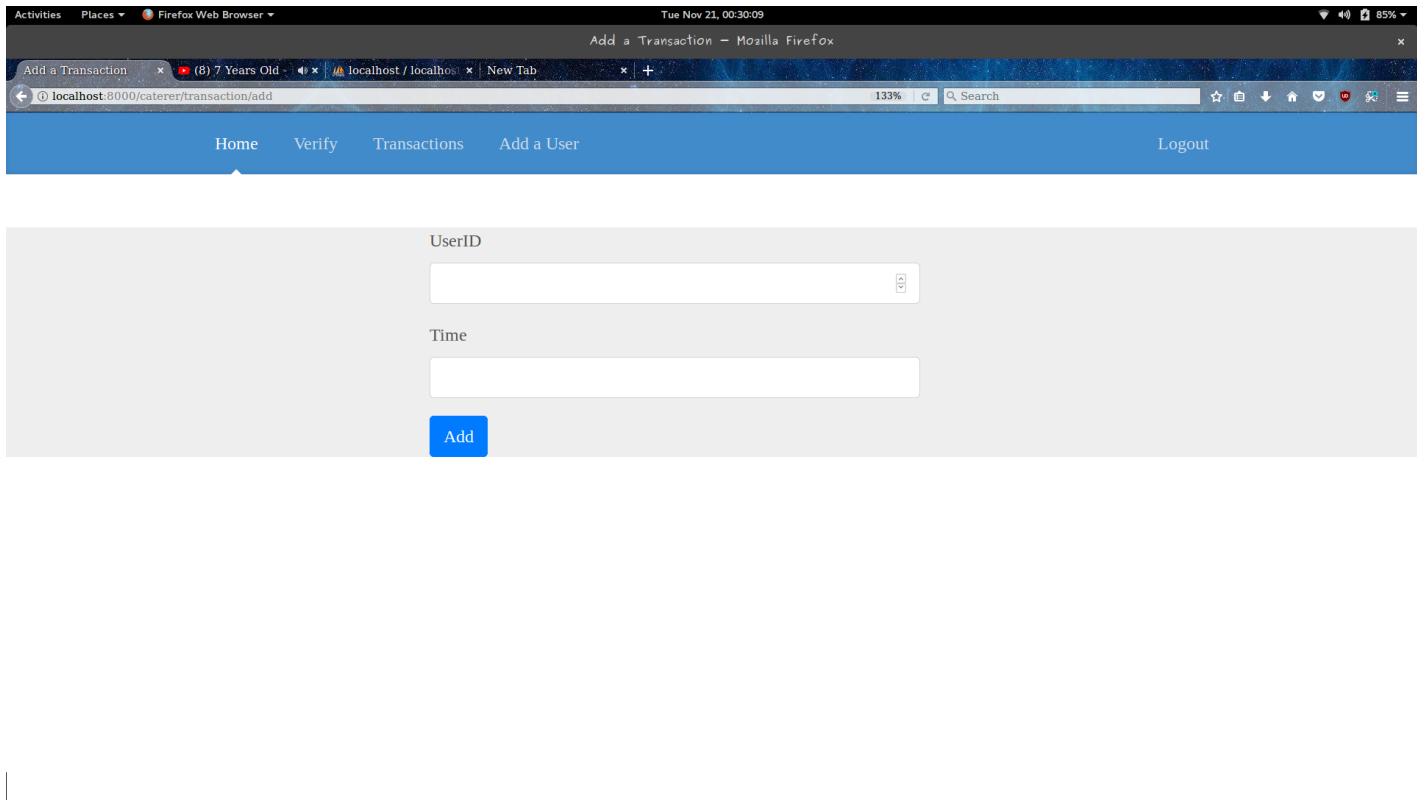
A screenshot of a Firefox browser window. The title bar says "Transactions - Mozilla Firefox". The address bar shows "localhost:8000/caterer/transaction/view". The page has a header "My Transactions" and a table with columns: UserID, Name, PlanID, Price, and Time.

### My Transactions

UserID	Name	PlanID	Price	Time
1	sadf werewrewr	1	20	09:00:00
1	sadf werewrewr	1	10	12:30:00
2	asdf fqew	1	20	09:55:00

## **## Adding a transaction**

The caterer can add a transaction by entering the user details and the time through this page.



A screenshot of a Firefox browser window titled "Add a Transaction - Mozilla Firefox". The address bar shows the URL "localhost:8000/caterer/transaction/add". The main content area displays a form with two input fields: "UserID" and "Time", each with a corresponding input box. Below the input boxes is a blue "Add" button. The browser interface includes a header with tabs for "Add a Transaction", "(8) 7 Years Old", "localhost / localhost", and "New Tab", along with standard browser controls like search and refresh.

## **## Managing the Pricing**

The caterer can view the current pricing scheme, by entering the PlanID through this page.

Activities Places Firefox Web Browser

Tue Nov 21, 00:30:22

Pricing Scheme - Mozilla Firefox

Pricing Scheme (8) 7 Years Old localhost / localhost New Tab

localhost:8000/caterer/pricing/view 133% Search

Home Verify Transactions Add a User Logout

PlanID

View

Activities Places Firefox Web Browser

Tue Nov 21, 00:58:36

Pricing Scheme - Mozilla Firefox

Pricing Scheme (8) 7 Years Old localhost / localhost New Tab

localhost:8000/caterer/pricing/view 133% Search

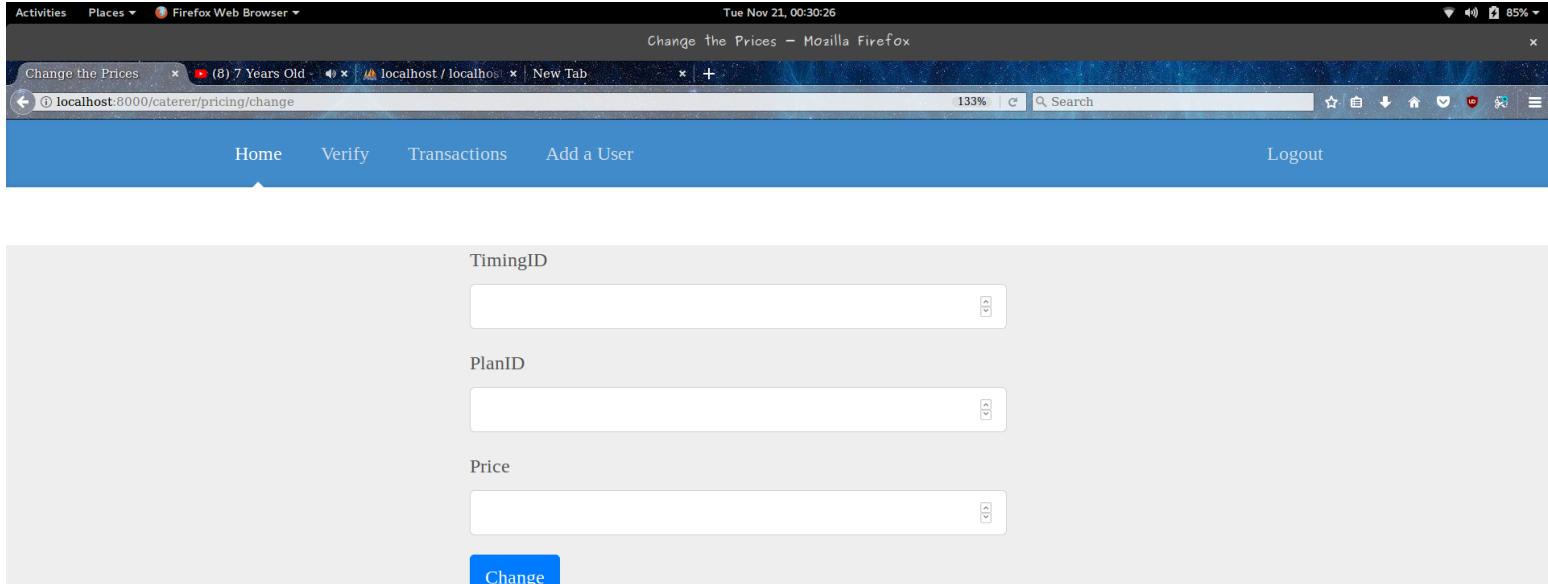
Home Verify Transactions Add a User Logout

## Pricing Scheme

Day	Time	Price
Monday	Breakfast	20
Monday	Lunch	10
Monday	HighTea	20

## ## Changing the Pricing Scheme

The Caterer can change the pricing scheme by entering the required details on this page, and it, then, redirects to the Pricing scheme of that particular PlanID.



Activities Places Firefox Web Browser Tue Nov 21, 00:30:26 Change the Prices - Mozilla Firefox

localhost:8000/caterer/pricing/change 133% Search

Home Verify Transactions Add a User Logout

TimingID

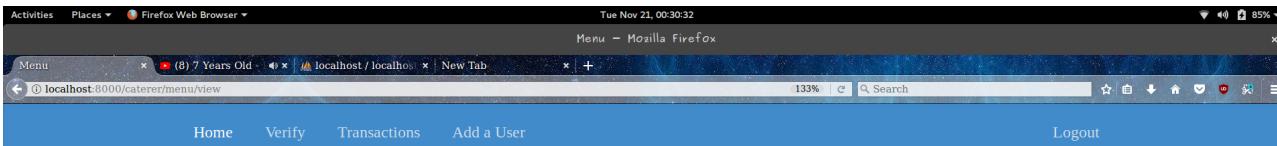
PlanID

Price

Change

## ## Viewing the Current Menu

The caterer can view the current menu through this page.



Activities Places Firefox Web Browser Tue Nov 21, 00:30:32 Menu - Mozilla Firefox

localhost:8000/caterer/menu/view 133% Search

Home Verify Transactions Add a User Logout

Day	Time	Product
Monday	Lunch	jlksjfl;sdkj

### Menu

Day	Time	Product
Monday	Lunch	jlksjfl;sdkj

## ## Changing the Menu

The Caterer can also change the menu, by entering the required details on this page.

A screenshot of a Firefox browser window titled "Add a Product to Menu - Mozilla Firefox". The address bar shows the URL "localhost:8000/caterer/menu/add". The page content is a form with two input fields: "ProductID" and "TimingID", each with a dropdown arrow icon. Below the fields is a blue "Add" button. The top navigation bar includes links for "Home", "Verify", "Transactions", "Add a User", and "Logout". The browser interface shows standard toolbar icons like search, refresh, and download.

Tue Nov 21, 00:30:38

Add a Product to Menu - Mozilla Firefox

Activities Places Firefox Web Browser

Add a Product to Menu (8) 7 Years Old localhost / localhost New Tab

localhost:8000/caterer/menu/add 133% Search

Home Verify Transactions Add a User Logout

ProductID

TimingID

Add

## # User's DashBoard

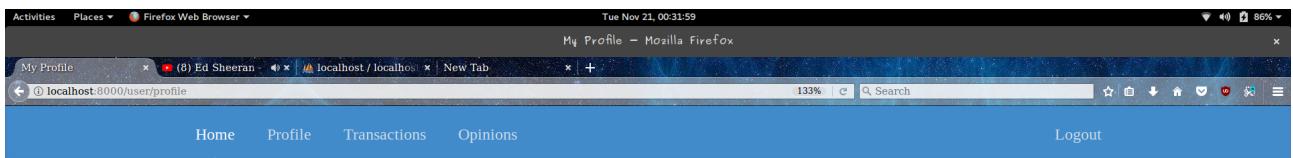
The User can select from the above operations to do, and so, he/she will be redirected to the corresponding page.

A screenshot of a Firefox browser window titled "HomePage - Mozilla Firefox". The address bar shows "localhost:8000/user/home". The main content area displays a user dashboard with four orange rectangular buttons, each containing white text:

- My Profile
- My Subscriptions »
- My Opinions
- My Transaction History

The browser interface includes a top navigation bar with tabs for "Activities", "Places", and "Firefox Web Browser". Below the tabs, there are links for "HomePage", "(8) Ed Sheeran", "localhost / localhost", and "New Tab". The status bar at the bottom shows "Tue Nov 21, 00:31:55" and "133%".

## ## Viewing the Profile/Details

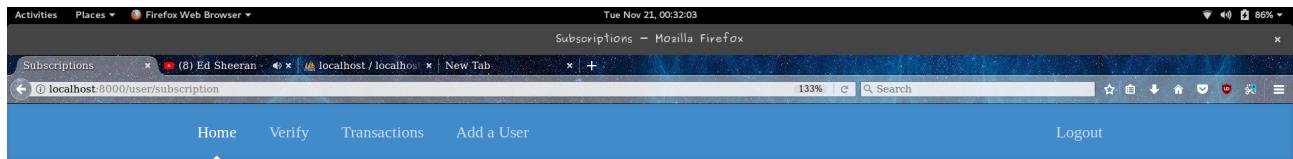


Welcome, sadf

Name : sadf werewrewr  
RollNo. : 160001001  
Email-Address : abc@example.com  
Phone No. : 234234  
Date Of Birth : 1998-10-10  
Year Of Study : 1  
Course : sdfsadf  
Card Details :

## **## Viewing the Subscriptions**

The User can view all his/her subscriptions with the corresponding caterers and the planids, on this page.



## My Subscriptions

CatererID	CatererName	PlanID	SubscribedOn
1	Bhopu	1	2017-11-17

## **## Viewing the Opinions**

The Diner can view all the opinions on the products served by the caterer on this page, and rate it.

Activities Places ▾ Firefox Web Browser ▾

Tue Nov 21, 00:32:17

My Opinions - Mozilla Firefox

localhost:8000/user/opinion

Home Profile Transactions Opinions Logout

CatererID	ProductName	Rating	Description
1	sadfsadf	3	sadfsdklfj
1	jlkjsjfl;sdkj	2	lsakdrjsdf
1	jkljljl	3	wrjweljkwlrlj

## Opinions

CatererID	ProductName	Rating	Description
1	sadfsadf	3	sadfsdklfj
1	jlkjsjfl;sdkj	2	lsakdrjsdf
1	jkljljl	3	wrjweljkwlrlj

### Add a new Opinion

CatererID

ProductID

## ## Adding a Opinion

The diner can add his opinion to the products served by the caterer, on this page.

Activities Places ▾ Firefox Web Browser ▾

Tue Nov 21, 00:32:25

My Opinions - Mozilla Firefox

localhost:8000/user/opinion

CatererID	ProductName	Rating	Description
1	sadfsadf	3	sadfsdklfj
1	jlkjsjfl;sdkj	2	lsakdrjsdf
1	jkljljl	3	wrjweljkwlrlj

### Add a new Opinion

CatererID

ProductID

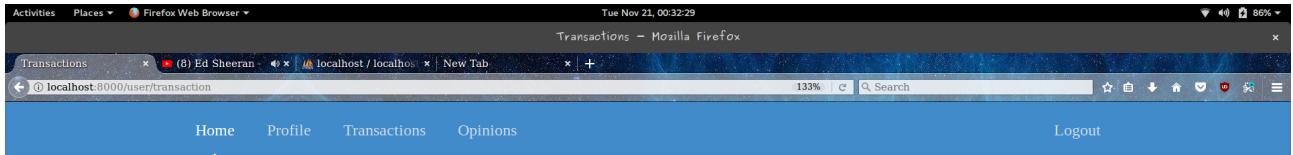
Rating

Description

Add

## ## Viewing the Transactions

The Diner can view all the transactions he/she has been involved in, along with the price it cost him/her, on this page.



### My Transactions

CatererID	Time	PlanID	Price
1	09:00:00	1	20
1	12:30:00	1	10