Database Management Project
Restaurant Review Solution
By: Peter Taing

Introduction

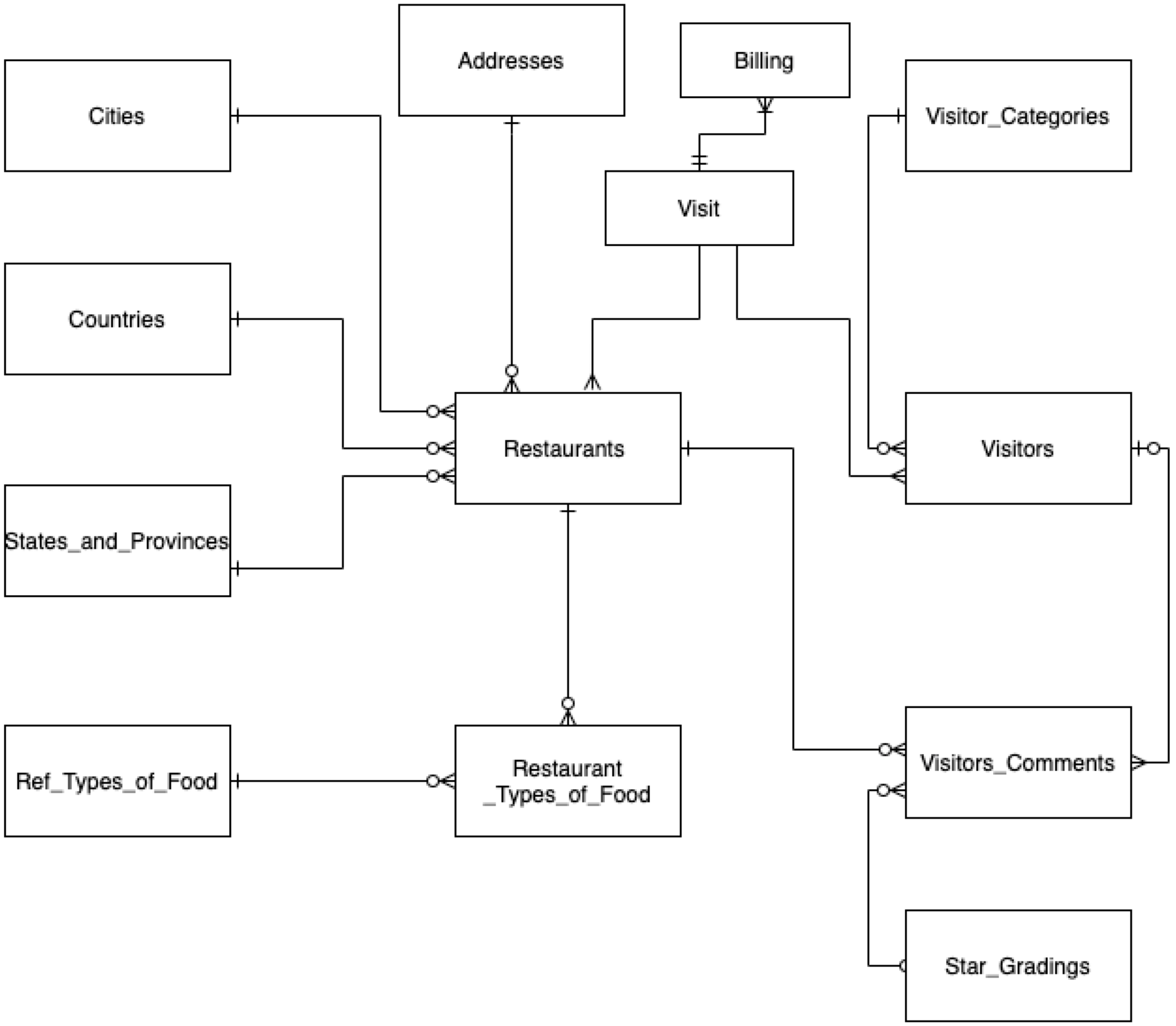
Restaurants are a kind of business that directly works with a variety of different types of customers throughout the world. With such a diverse customer client base, it is vital for a restaurant to have a database that can satisfy their needs. For a Restaurant business to be successful they require a management system that is both efficient and user-friendly to provide a service that fulfills the consumer demand. As that is what the end goal is for mostly all businesses.

The restaurant business has changed over the past few decades. Speed and efficiency have increased due to technology, now consumers expect food service to be done quickly and in a timely manner. Furthermore, the number of restaurants has increased as each restaurant has a unique cuisine catering to different types of people. Each restaurant has a different method of functioning and responding to orders. As competition rises due to the increase, each restaurant is searching for a database system.

Our group has decided to address and complete a full-proof Database system that theoretically, any restaurant could implement. We have created a database for chains of restaurants to help keep track of many different entities and types of information a restaurant might have. Our database can maintain large amounts of data and be as accurate as possible that can allow users to easily store, update, and research data. We have developed a conceptual and logical model to help create a visualization of our solution. We have showcased our super/subtype data relationship. We have also included a data dictionary that will help one be able to navigate through our implementation of SQL. We have included 4 basic calls to retrieve data in our database system.

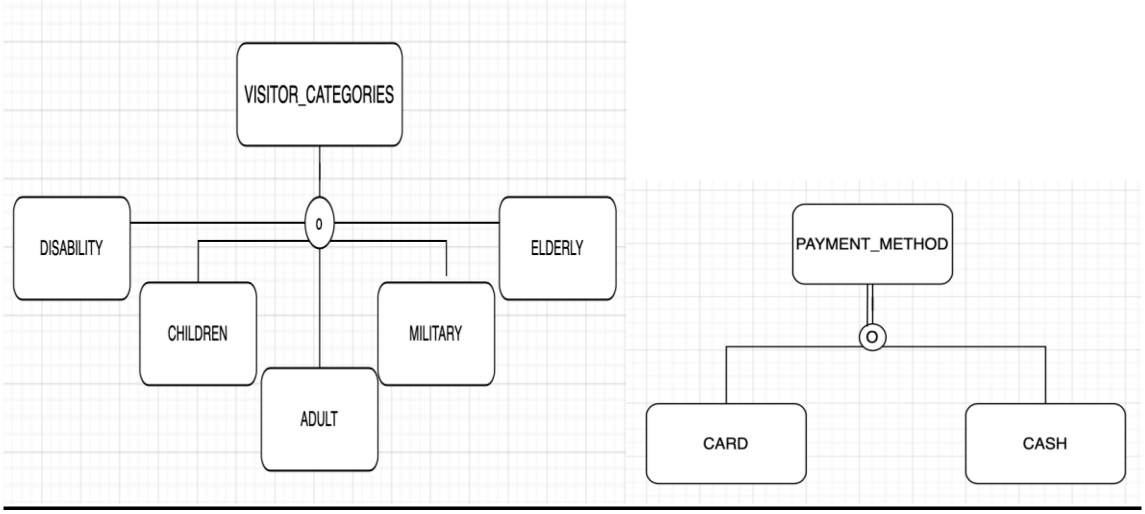
We have created a system where restaurant owners can have a mass overview of all the vital information needed to make the decision in regard to the business. Our database includes address, direction, star grading, visitors' name, and comment, and lastly billing information that can be used to track the transaction. Since business owners have all this information constantly in the palm of their hand, they can use this to address problems that they may be having in their system.

A. Conceptual Model



For our conceptual model, We have included 13 entities with their appropriate relationships. We have used many relationship types such as; optional many, mandatory many, mandatory one, and optional one to display the links between all the entities. Almost every single entity is linked with the 'Restaurants' entity. This model shows many restaurants in many different countries and also links to many different visitors. It also links what each visitor was billed and what comments or 'reviews' they left about their experience at the restaurant and also allows them to leave a star grading for each restaurant.

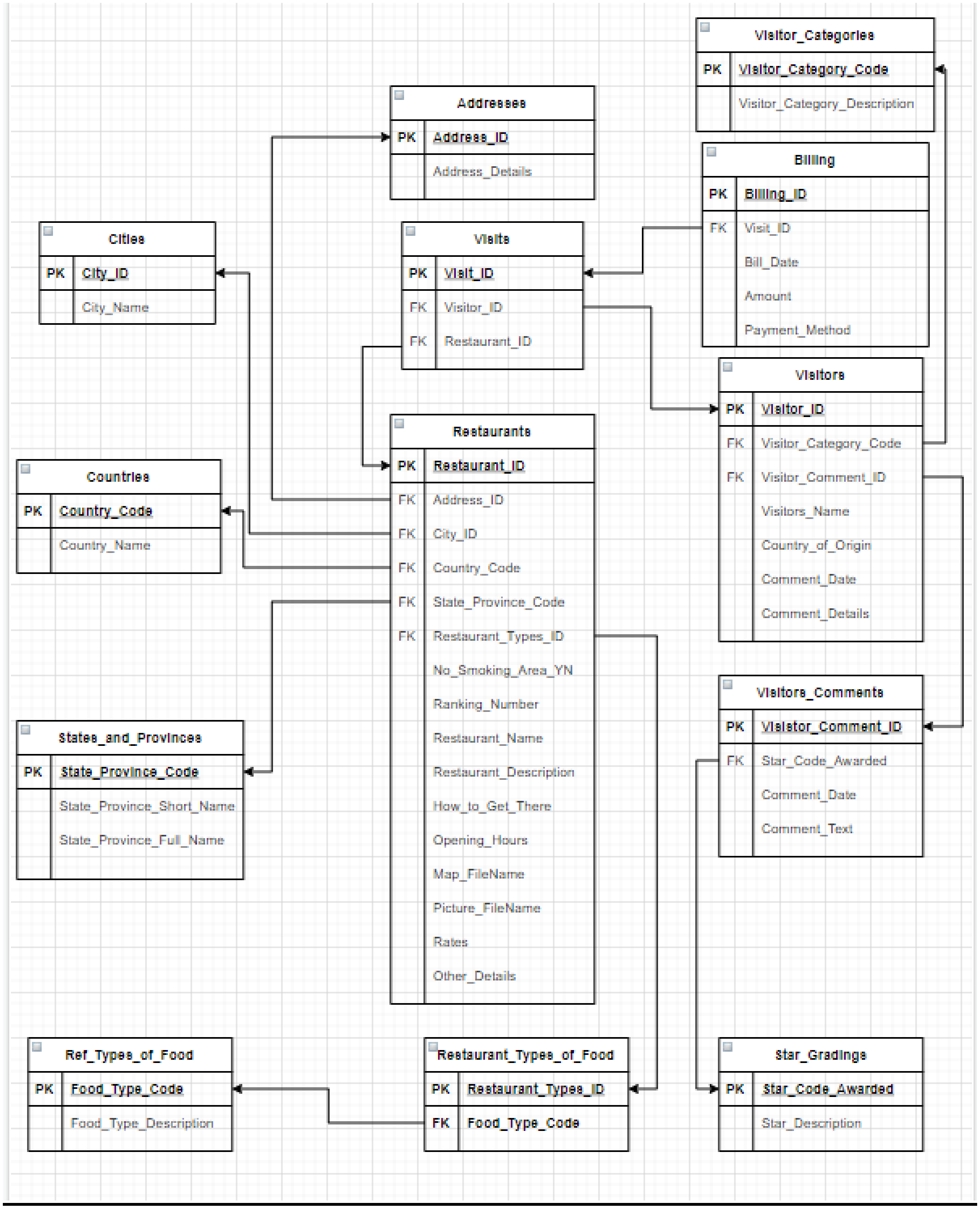
Supertype/Subtype Relationships



We have included two supertype/subtype relationships.

1. The first one is visitor_categories relationship. The reason why we create this relationship is to study which type of customer enjoys going to a particular restaurant the most so that we can focus more on this target customer. We create this relationship by using Partial Specialization Rule (single line) which means that the supertype could belong to either of the subtypes or none of them and Overlap Rule means that the instance of the supertype could be more than one subtype, for example, an adult can also be in the military.
2. The second one is payment_method relationship. We create this relationship to keep track of the type of transaction and make sure everything is balanced at the end of each month. This relationship use Total Specialization Rule (double line) which means that an instance of the supertype must belong to either of the subtypes and we have the same overlap rule as the first supertype/subtype which means that customer can pay a certain amount by cash and a certain amount by card.

B. Logical Model



This is our complete logical model we have created. Our model can be broken up into 3 key categories.

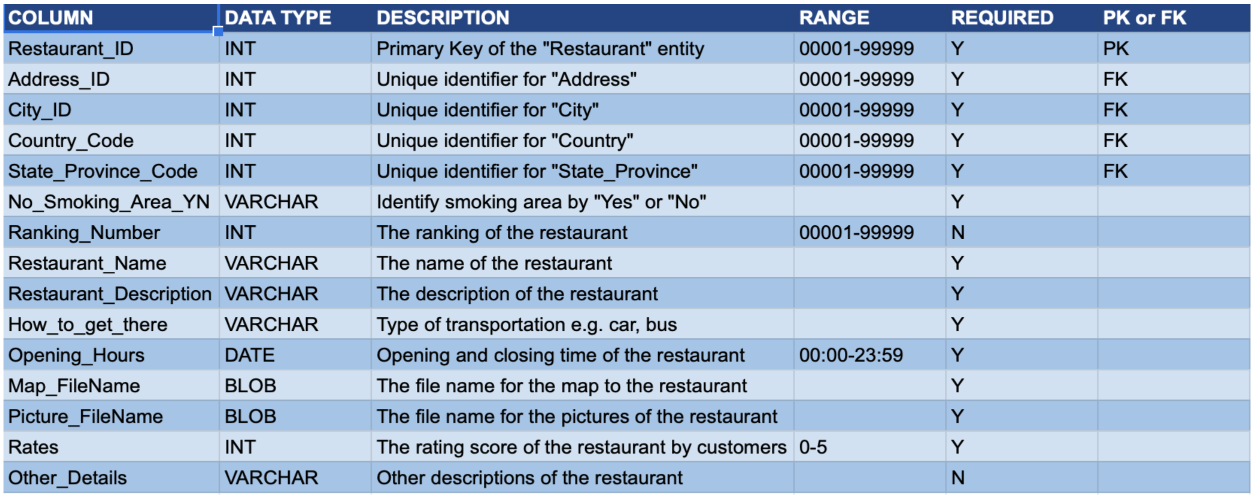
1. The first category will be the location of the restaurants in our database. They’re 4 different entities that have to do with location. Each entity has a foreign key in the restaurants table. “Adress_ID, City_ID,Country_Code,State_Province_Code.” These four entities are vital to our restaurants table and all the information in each entity will help the user locate each restaurant.
2. The second category will be the “Visits” entity. The visits entity has ‘Restaurant_ID’ as a FK which makes it extremely important to our database because our restaurants entity is the heart of our database. The visits entity allows us to see entities such as; “Billing, Visitors, visitor_comments, Star_Gradings, and visitor_categories. This is a very important aspect of our database because it allows us to see each visitor, the corresponding bill, and comments with grades if they chose to leave them. This is a key aspect of our database because it allows us to see the feedback customers are leaving and what was on their bill during their visit.
3. Lastly we have our third category which is the “Restaurant_Types_of_food” category. This category only consists of two different entities. It is by far our smallest and least complicated set of entities. The sole purpose of these entities is to show the types of food each restaurant has, and then the “ref_Types_of_food” will have the food description of the food type. The only thing needed to find the food description is the ‘Food_type_code” which is the FK of “Restaurant_Types_of_food.”

C. Data Dictionary

Our data dictionary provides us with precise information about each entity including data type such as number, variable character, and date, description of each entity, range, restriction if this entity is required or not, and finally, the key type.

Entity: Restaurants

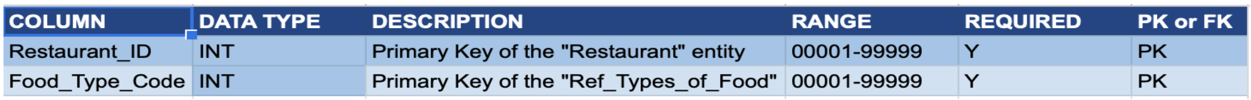
This table contains information about different types of restaurants.



COLUMN	DATA TYPE	DESCRIPTION	RANGE	REQUIRED	PK or FK
Restaurant_ID	INT	Primary Key of the "Restaurant" entity	00001-99999	Y	PK
Address_ID	INT	Unique identifier for "Address"	00001-99999	Y	FK
City_ID	INT	Unique identifier for "City"	00001-99999	Y	FK
Country_Code	INT	Unique identifier for "Country"	00001-99999	Y	FK
State_Province_Code	INT	Unique identifier for "State_Province"	00001-99999	Y	FK
No_Smoking_Area_YN	VARCHAR	Identify smoking area by "Yes" or "No"		Y	
Ranking_Number	INT	The ranking of the restaurant	00001-99999	N	
Restaurant_Name	VARCHAR	The name of the restaurant		Y	
Restaurant_Description	VARCHAR	The description of the restaurant		Y	
How_to_get_there	VARCHAR	Type of transportation e.g. car, bus		Y	
Opening_Hours	DATE	Opening and closing time of the restaurant	00:00-23:59	Y	
Map_FileName	BLOB	The file name for the map to the restaurant		Y	
Picture_FileName	BLOB	The file name for the pictures of the restaurant		Y	
Rates	INT	The rating score of the restaurant by customers	0-5	Y	
Other_Details	VARCHAR	Other descriptions of the restaurant		N	

Entity: Restaurant_Types_of_Food

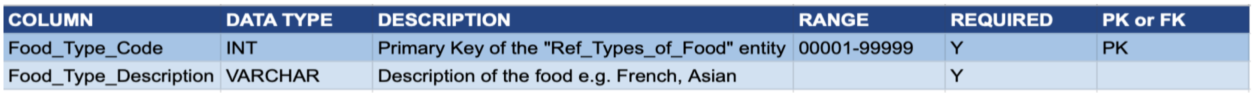
This table contains information about different types of food at different restaurants' locations.



COLUMN	DATA TYPE	DESCRIPTION	RANGE	REQUIRED	PK or FK
Restaurant_ID	INT	Primary Key of the "Restaurant" entity	00001-99999	Y	PK
Food_Type_Code	INT	Primary Key of the "Ref_Types_of_Food"	00001-99999	Y	PK

Entity: Ref_Types_of_Food

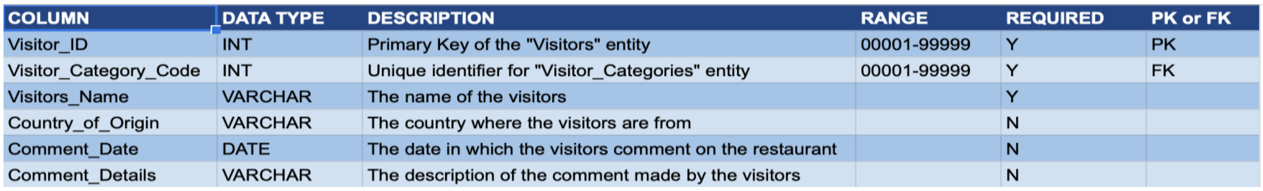
This table contains information about the food at different restaurants.



COLUMN	DATA TYPE	DESCRIPTION	RANGE	REQUIRED	PK or FK
Food_Type_Code	INT	Primary Key of the "Ref_Types_of_Food" entity	00001-99999	Y	PK
Food_Type_Description	VARCHAR	Description of the food e.g. French, Asian		Y	

Entity: Visitors

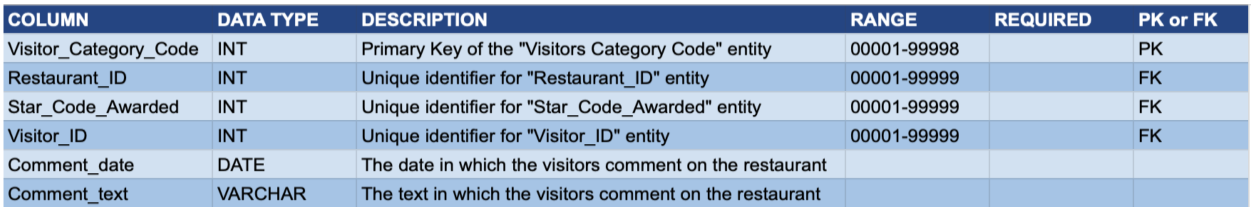
This table contains information about visitors who visit the restaurants.



COLUMN	DATA TYPE	DESCRIPTION	RANGE	REQUIRED	PK or FK
Visitor_ID	INT	Primary Key of the "Visitors" entity	00001-99999	Y	PK
Visitor_Category_Code	INT	Unique identifier for "Visitor_Categories" entity	00001-99999	Y	FK
Visitors_Name	VARCHAR	The name of the visitors		Y	
Country_of_Origin	VARCHAR	The country where the visitors are from		N	
Comment_Date	DATE	The date in which the visitors comment on the restaurant		N	
Comment_Details	VARCHAR	The description of the comment made by the visitors		N	

Entity: Visitors_Comments

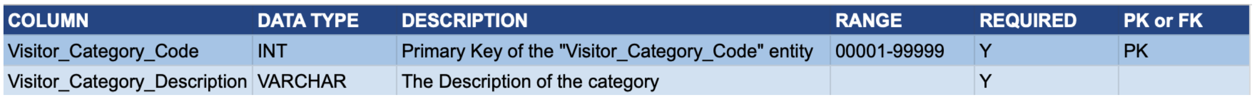
This table contains information about the visitors’ comments regarding the restaurants.



COLUMN	DATA TYPE	DESCRIPTION	RANGE	REQUIRED	PK or FK
Visitor_Category_Code	INT	Primary Key of the "Visitors Category Code" entity	00001-99998		PK
Restaurant_ID	INT	Unique identifier for "Restaurant_ID" entity	00001-99999		FK
Star_Code_Awarded	INT	Unique identifier for "Star_Code_Awarded" entity	00001-99999		FK
Visitor_ID	INT	Unique identifier for "Visitor_ID" entity	00001-99999		FK
Comment_date	DATE	The date in which the visitors comment on the restaurant			
Comment_text	VARCHAR	The text in which the visitors comment on the restaurant			

Entity: Visitor_Categories

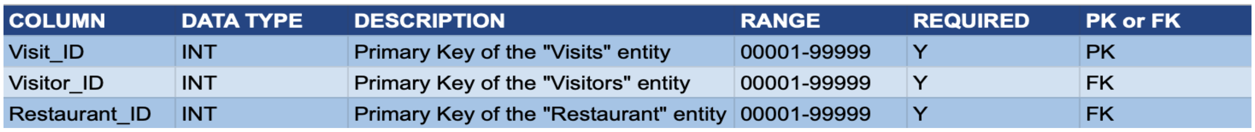
This table contains information about different types of visitors, e.g. military, adult, etc.



COLUMN	DATA TYPE	DESCRIPTION	RANGE	REQUIRED	PK or FK
Visitor_Category_Code	INT	Primary Key of the "Visitor_Category_Code" entity	00001-99999	Y	PK
Visitor_Category_Description	VARCHAR	The Description of the category		Y	

Entity: Visits

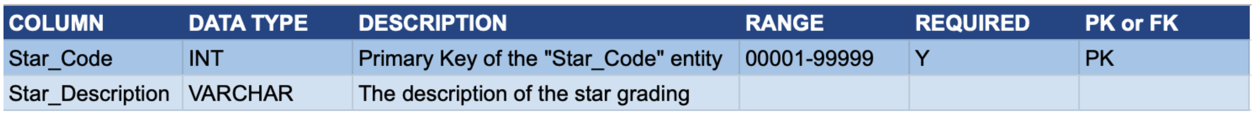
This table contains information about visitors’ visits to the restaurants.



COLUMN	DATA TYPE	DESCRIPTION	RANGE	REQUIRED	PK or FK
Visit_ID	INT	Primary Key of the "Visits" entity	00001-99999	Y	PK
Visitor_ID	INT	Primary Key of the "Visitors" entity	00001-99999	Y	FK
Restaurant_ID	INT	Primary Key of the "Restaurant" entity	00001-99999	Y	FK

Entity: Star_Gradings

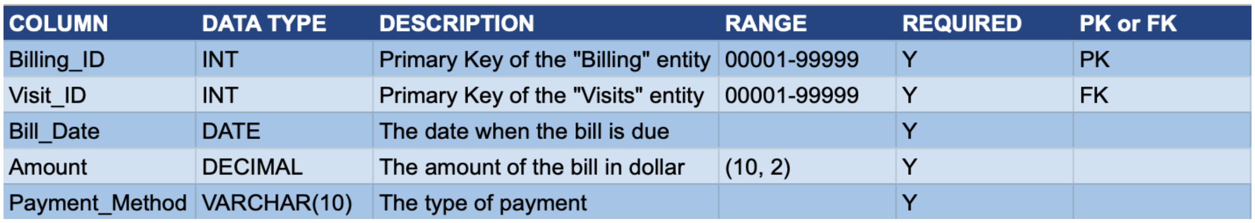
This table contains information about the star rating of each restaurant.



COLUMN	DATA TYPE	DESCRIPTION	RANGE	REQUIRED	PK or FK
Star_Code	INT	Primary Key of the "Star_Code" entity	00001-99999	Y	PK
Star_Description	VARCHAR	The description of the star grading			

Entity: Billing

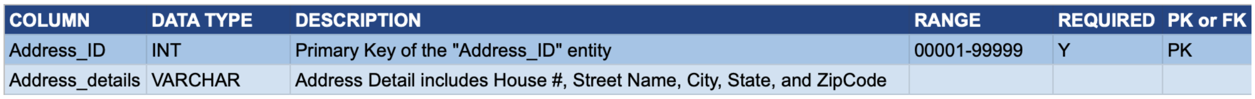
This table contains information about visitors' billing.



COLUMN	DATA TYPE	DESCRIPTION	RANGE	REQUIRED	PK or FK
Billing_ID	INT	Primary Key of the "Billing" entity	00001-99999	Y	PK
Visit_ID	INT	Primary Key of the "Visits" entity	00001-99999	Y	FK
Bill_Date	DATE	The date when the bill is due		Y	
Amount	DECIMAL	The amount of the bill in dollar	(10, 2)	Y	
Payment_Method	VARCHAR(10)	The type of payment		Y	

Entity: Addresses

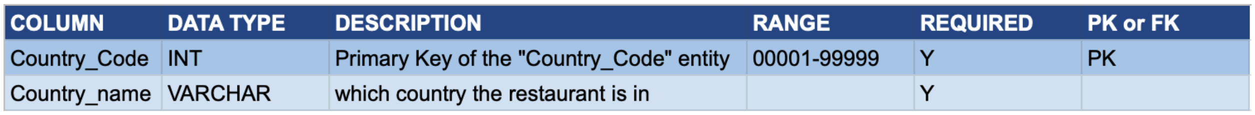
This table contains information about the address of the restaurant.



COLUMN	DATA TYPE	DESCRIPTION	RANGE	REQUIRED	PK or FK
Address_ID	INT	Primary Key of the "Address_ID" entity	00001-99999	Y	PK
Address_details	VARCHAR	Address Detail includes House #, Street Name, City, State, and ZipCode			

Entity: Countries

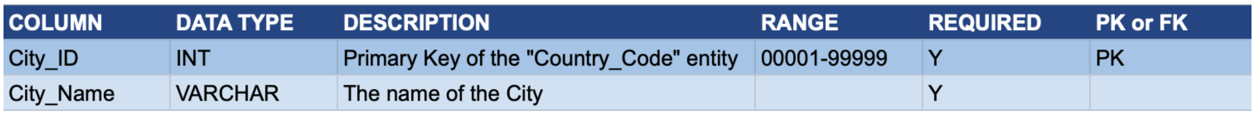
This table contains information about which country the restaurant is located.



COLUMN	DATA TYPE	DESCRIPTION	RANGE	REQUIRED	PK or FK
Country_Code	INT	Primary Key of the "Country_Code" entity	00001-99999	Y	PK
Country_name	VARCHAR	which country the restaurant is in		Y	

Entity: Cities

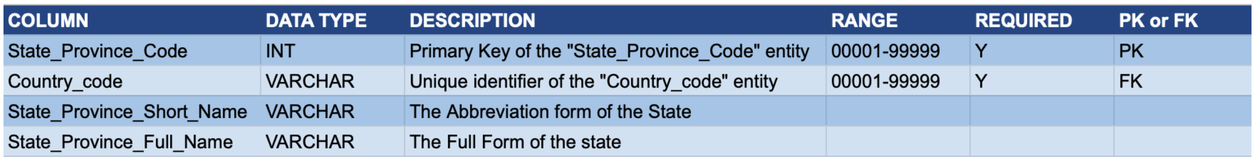
This table contains information about which city the restaurant is located.



COLUMN	DATA TYPE	DESCRIPTION	RANGE	REQUIRED	PK or FK
City_ID	INT	Primary Key of the "Country_Code" entity	00001-99999	Y	PK
City_Name	VARCHAR	The name of the City		Y	

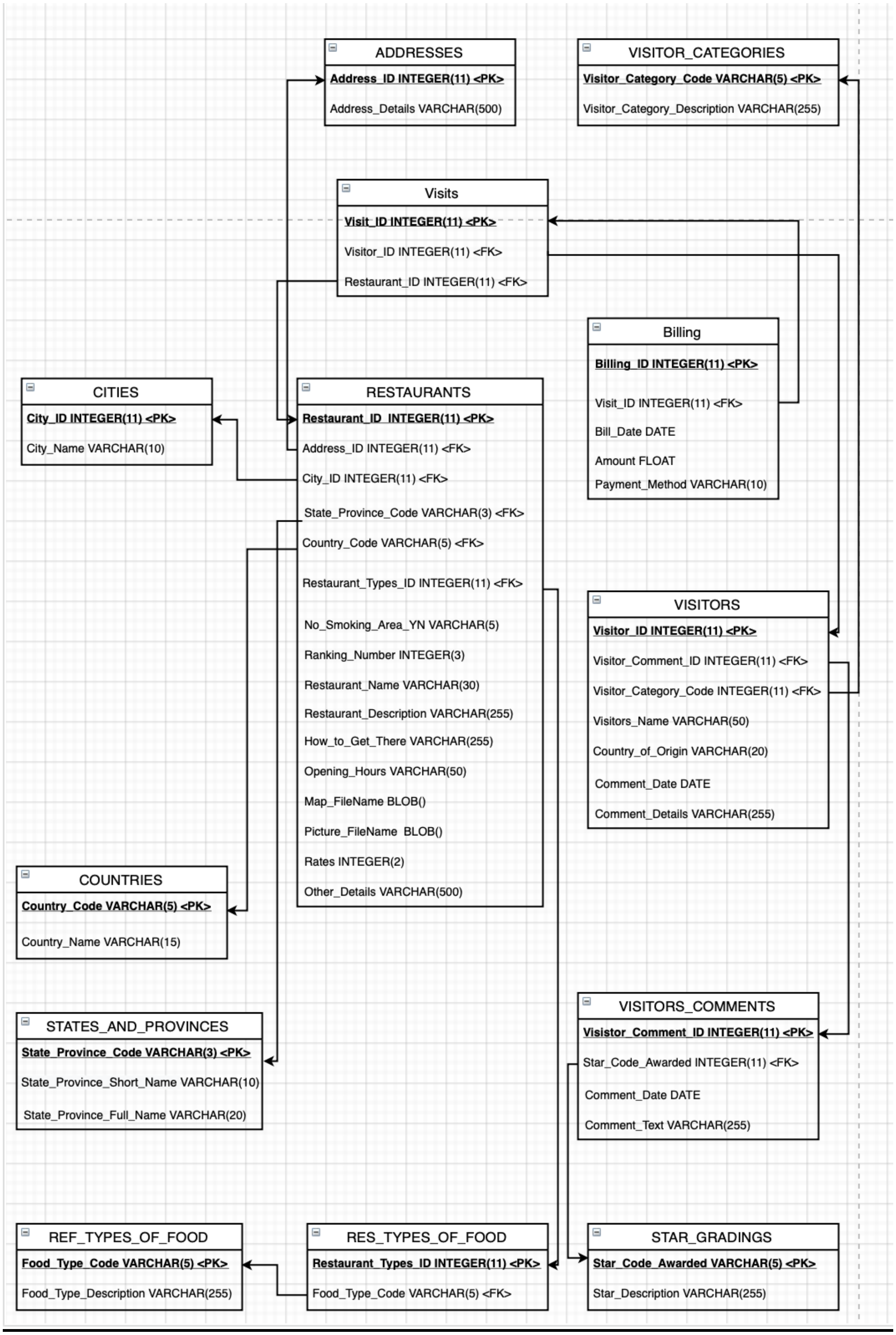
Entity: States_and_Provinces

This table contains information about which state the restaurant is located.



COLUMN	DATA TYPE	DESCRIPTION	RANGE	REQUIRED	PK or FK
State_Province_Code	INT	Primary Key of the "State_Province_Code" entity	00001-99999	Y	PK
Country_code	VARCHAR	Unique identifier of the "Country_code" entity	00001-99999	Y	FK
State_Province_Short_Name	VARCHAR	The Abbreviation form of the State			
State_Province_Full_Name	VARCHAR	The Full Form of the state			

D. Physical Model



ADDRESSES
Address_ID INTEGER(11) <PK>
Address_Details VARCHAR(500)

VISITOR_CATEGORIES
Visitor_Category_Code VARCHAR(5) <PK>
Visitor_Category_Description VARCHAR(255)

Visits
Visit_ID INTEGER(11) <PK>
Visitor_ID INTEGER(11) <FK>
Restaurant_ID INTEGER(11) <FK>

Billing
Billing_ID INTEGER(11) <PK>
Visit_ID INTEGER(11) <FK>
Bill_Date DATE
Amount FLOAT
Payment_Method VARCHAR(10)

CITIES
City_ID INTEGER(11) <PK>
City_Name VARCHAR(10)

RESTAURANTS
Restaurant_ID INTEGER(11) <PK>
Address_ID INTEGER(11) <FK>
City_ID INTEGER(11) <FK>
State_Province_Code VARCHAR(3) <FK>
Country_Code VARCHAR(5) <FK>
Restaurant_Types_ID INTEGER(11) <FK>
No_Smoking_Area_YN VARCHAR(5)
Ranking_Number INTEGER(3)
Restaurant_Name VARCHAR(30)
Restaurant_Description VARCHAR(255)
How_to_Get_There VARCHAR(255)
Opening_Hours VARCHAR(50)
Map_FileName BLOB()
Picture_FileName BLOB()
Rates INTEGER(2)
Other_Details VARCHAR(500)

VISITORS
Visitor_ID INTEGER(11) <PK>
Visitor_Comment_ID INTEGER(11) <FK>
Visitor_Category_Code INTEGER(11) <FK>
Visitors_Name VARCHAR(50)
Country_of_Origin VARCHAR(20)
Comment_Date DATE
Comment_Details VARCHAR(255)

COUNTRIES
Country_Code VARCHAR(5) <PK>
Country_Name VARCHAR(15)

STATES_AND_PROVINCES
State_Province_Code VARCHAR(3) <PK>
State_Province_Short_Name VARCHAR(10)
State_Province_Full_Name VARCHAR(20)

VISITORS_COMMENTS
Visistor_Comment_ID INTEGER(11) <PK>
Star_Code_Awarded INTEGER(11) <FK>
Comment_Date DATE
Comment_Text VARCHAR(255)

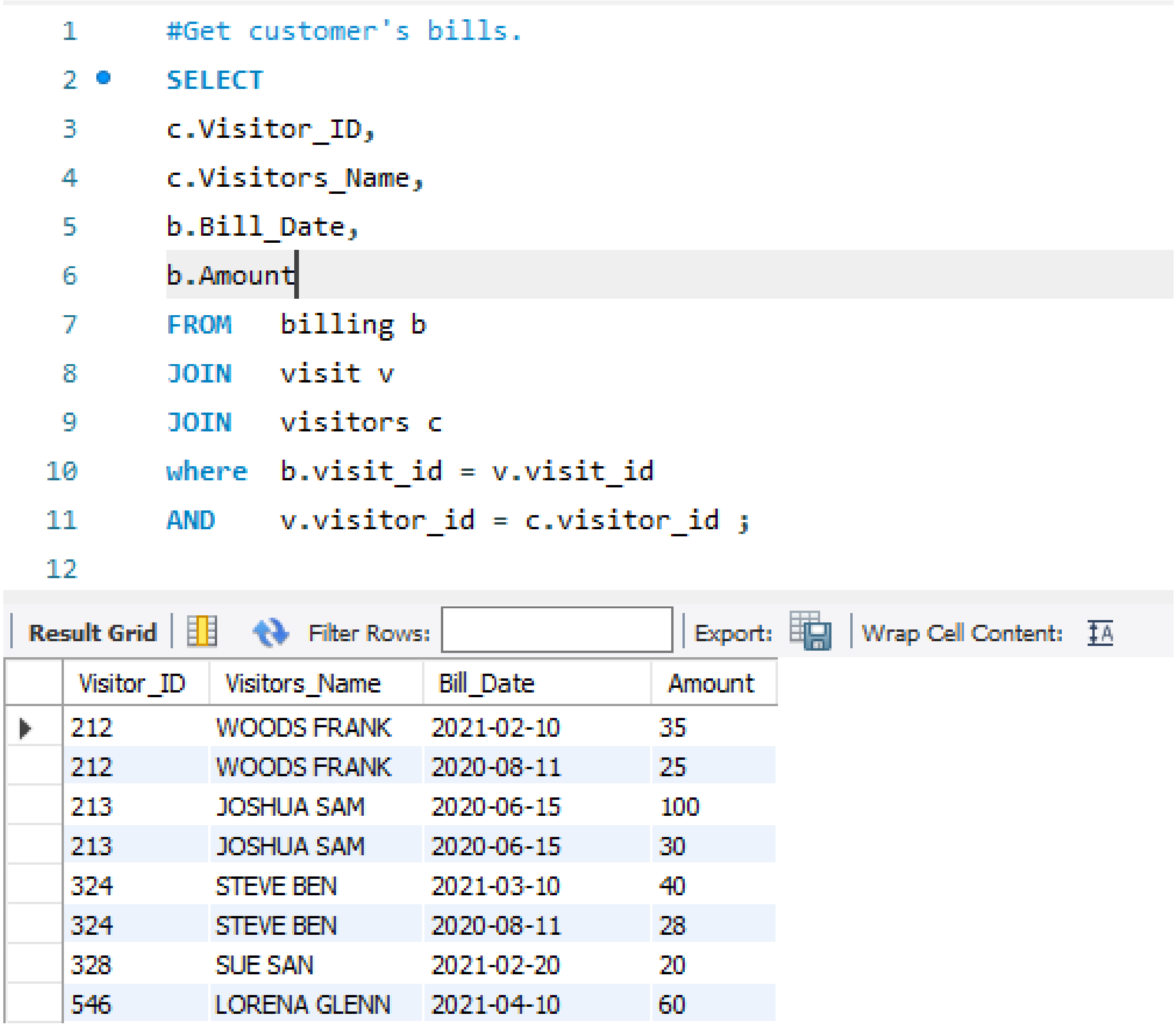
REF_TYPES_OF_FOOD
Food_Type_Code VARCHAR(5) <PK>
Food_Type_Description VARCHAR(255)

RES_TYPES_OF_FOOD
Restaurant_Types_ID INTEGER(11) <PK>
Food_Type_Code VARCHAR(5) <FK>

STAR_GRADINGS
Star_Code_Awarded VARCHAR(5) <PK>
Star_Description VARCHAR(255)

- This is our completed physical design of the database. The purpose is to translate the logical description of data into technical specifications for storing and retrieving data. We create a design for storing data that will provide adequate performance and ensure database integrity, security, and recoverability.
- As you can see, it is very similar to the logical model; however, it contains the data type for each attribute which we get from our data dictionary. We want to create the data type for each attribute to be as accurate as possible in order to achieve an efficient and reliable database. We have included many types of data types, including INT, VARCHAR, FLOAT, DATE, and BLOB. For attributes that require numbers such as the ID for each primary key, we use INT and other attributes such as restaurant’s name and visitor’s name, we use VARCHAR. For the amount of money, we use FLOAT because it requires decimal numbers and the date in which the bill is made, we use DATE. We have also included BLOB data type for Map_FileName and Picture_FileName attributes because these attributes require users to upload pictures or particular files to enhance the information of our database.
- We will also implement security and authorization rules for different types of restaurants (subjects, objects, actions, constraints). The subjects include the head of the restaurant or the receptionist who can insert, read, modify, delete certain data based on specific situations.
- We will also implement database recovery which will prevent loss or damage of data. We will do periodic backup (once daily after the restaurant is closed) and will be stored in a secure, off-site location. We plan to store our transaction in a transaction log which is a record of essential data for each transaction processed against the database. In case of an aborted transaction and incorrect data, we will use rollback which is an undo of unwanted changes to a database and apply the before image. In case of system failure and database destruction, we will switch to our duplicate database. Finally, in the future, we are considering using cloud-based data management services which will increase our flexibility and reduce cost.

E. SQL Queries

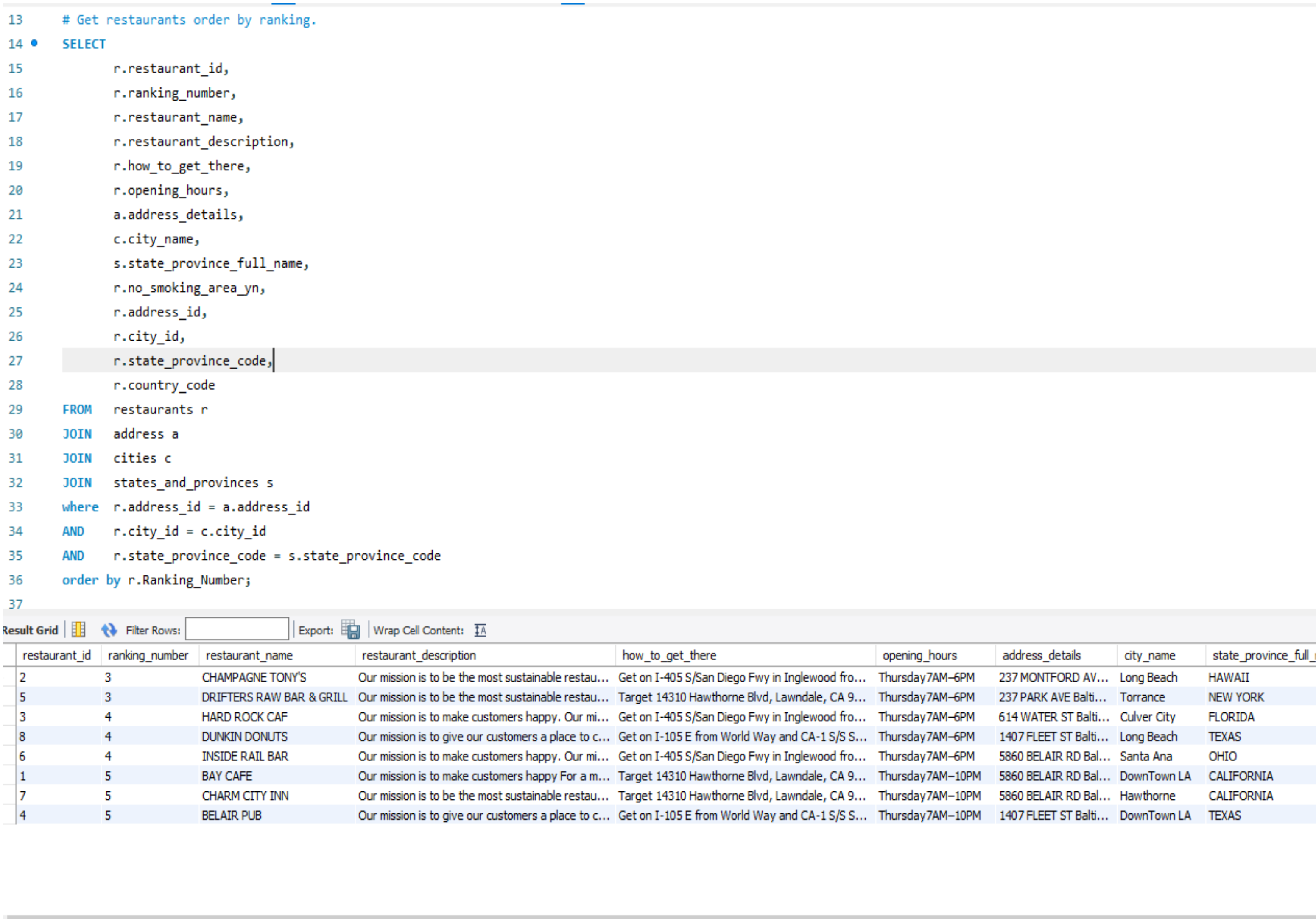


```
#Get customer's bills.
SELECT
c.Visitor_ID,
c.Visitors_Name,
b.Bill_Date,
b.Amount
FROM    billing b
JOIN    visit v
JOIN    visitors c
where   b.visit_id = v.visit_id
AND     v.visitor_id = c.visitor_id ;
```

Visitor_ID	Visitors_Name	Bill_Date	Amount
212	WOODS FRANK	2021-02-10	35
212	WOODS FRANK	2020-08-11	25
213	JOSHUA SAM	2020-06-15	100
213	JOSHUA SAM	2020-06-15	30
324	STEVE BEN	2021-03-10	40
324	STEVE BEN	2020-08-11	28
328	SUE SAN	2021-02-20	20
546	LORENA GLENN	2021-04-10	60

Outcome of running Query #1:

- This query allows the user to get all the customer's bills and the date that each of the customers paid the bill. This query was joined from 3 tables: **billing**, **visit**, and **visitors.**

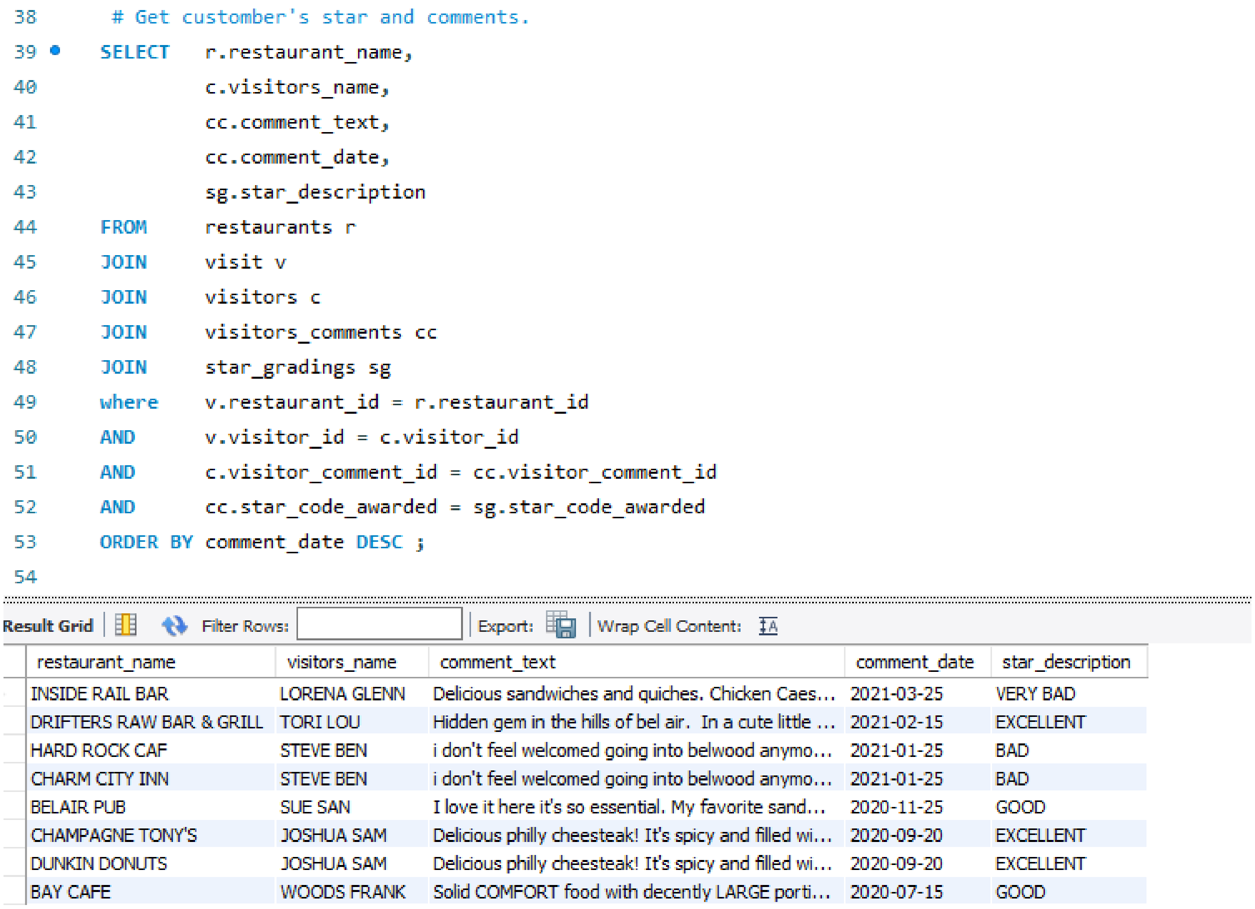


```
# Get restaurants order by ranking.
SELECT
       r.restaurant_id,
       r.ranking_number,
       r.restaurant_name,
       r.restaurant_description,
       r.how_to_get_there,
       r.opening_hours,
       a.address_details,
       c.city_name,
       s.state_province_full_name,
       r.no_smoking_area_yn,
       r.address_id,
       r.city_id,
       r.state_province_code,
       r.country_code
FROM   restaurants r
JOIN   address a
JOIN   cities c
JOIN   states_and_provinces s
where  r.address_id = a.address_id
AND    r.city_id = c.city_id
AND    r.state_province_code = s.state_province_code
order by r.Ranking_Number;
```

restaurant_id	ranking_number	restaurant_name	restaurant_description	how_to_get_there	opening_hours	address_details	city_name	state_province_full_
2	3	CHAMPAGNE TONY'S	Our mission is to be the most sustainable restau...	Get on I-405 S/San Diego Fwy in Inglewood fro...	Thursday7AM–6PM	237 MONTFORD AV...	Long Beach	HAWAII
5	3	DRIFTERS RAW BAR & GRILL	Our mission is to be the most sustainable restau...	Target 14310 Hawthorne Blvd, Lawndale, CA 9...	Thursday7AM–6PM	237 PARK AVE Balti...	Torrance	NEW YORK
3	4	HARD ROCK CAF	Our mission is to make customers happy. Our mi...	Get on I-405 S/San Diego Fwy in Inglewood fro...	Thursday7AM–6PM	614 WATER ST Balti...	Culver City	FLORIDA
8	4	DUNKIN DONUTS	Our mission is to give our customers a place to c...	Get on I-105 E from World Way and CA-1 S/S S...	Thursday7AM–6PM	1407 FLEET ST Balti...	Long Beach	TEXAS
6	4	INSIDE RAIL BAR	Our mission is to make customers happy. Our mi...	Get on I-405 S/San Diego Fwy in Inglewood fro...	Thursday7AM–6PM	5860 BELAIR RD Bal...	Santa Ana	OHIO
1	5	BAY CAFE	Our mission is to make customers happy For a m...	Target 14310 Hawthorne Blvd, Lawndale, CA 9...	Thursday7AM–10PM	5860 BELAIR RD Bal...	DownTown LA	CALIFORNIA
7	5	CHARM CITY INN	Our mission is to be the most sustainable restau...	Target 14310 Hawthorne Blvd, Lawndale, CA 9...	Thursday7AM–10PM	5860 BELAIR RD Bal...	Hawthorne	CALIFORNIA
4	5	BELAIR PUB	Our mission is to give our customers a place to c...	Get on I-105 E from World Way and CA-1 S/S S...	Thursday7AM–10PM	1407 FLEET ST Balti...	DownTown LA	TEXAS

Outcome of running Query #2:

- This query returns all the restaurants ordered by ranking. The query provides the detail of each restaurant with the columns restaurants_description, how_to_get_there, opening_hours, location. One thing special about this query is that it orders the restaurants list by using the column ranking_number to rank them from lower to higher.

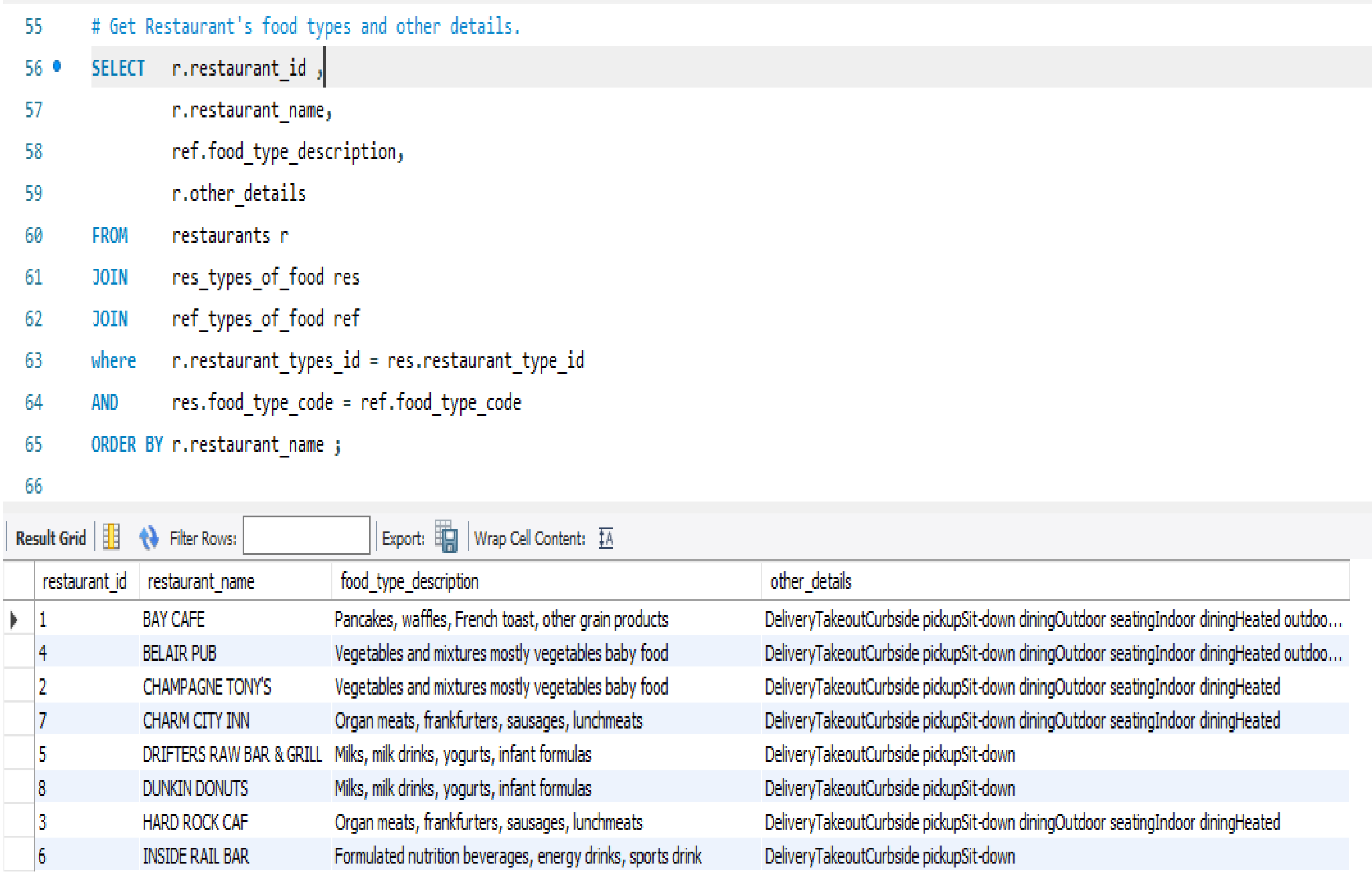


```
 # Get customer's star and comments.
SELECT   r.restaurant_name,
         c.visitors_name,
         cc.comment_text,
         cc.comment_date,
         sg.star_description
FROM     restaurants r
JOIN     visit v
JOIN     visitors c
JOIN     visitors_comments cc
JOIN     star_gradings sg
where    v.restaurant_id = r.restaurant_id
AND      v.visitor_id = c.visitor_id
AND      c.visitor_comment_id = cc.visitor_comment_id
AND      cc.star_code_awarded = sg.star_code_awarded
ORDER BY comment_date DESC ;
```

restaurant_name	visitors_name	comment_text	comment_date	star_description
INSIDE RAIL BAR	LORENA GLENN	Delicious sandwiches and quiches. Chicken Caes...	2021-03-25	VERY BAD
DRIFTERS RAW BAR & GRILL	TORI LOU	Hidden gem in the hills of bel air. In a cute little ...	2021-02-15	EXCELLENT
HARD ROCK CAF	STEVE BEN	i don't feel welcomed going into belwood anymo...	2021-01-25	BAD
CHARM CITY INN	STEVE BEN	i don't feel welcomed going into belwood anymo...	2021-01-25	BAD
BELAIR PUB	SUE SAN	I love it here it's so essential. My favorite sand...	2020-11-25	GOOD
CHAMPAGNE TONY'S	JOSHUA SAM	Delicious philly cheesteak! It's spicy and filled wi...	2020-09-20	EXCELLENT
DUNKIN DONUTS	JOSHUA SAM	Delicious philly cheesteak! It's spicy and filled wi...	2020-09-20	EXCELLENT
BAY CAFE	WOODS FRANK	Solid COMFORT food with decently LARGE porti...	2020-07-15	GOOD

<u>Outcome of running Query #3:</u>

- This query will show the data of all the customers that give the feedback and star to those restaurants they visited, and the date the restaurants received back the comments.

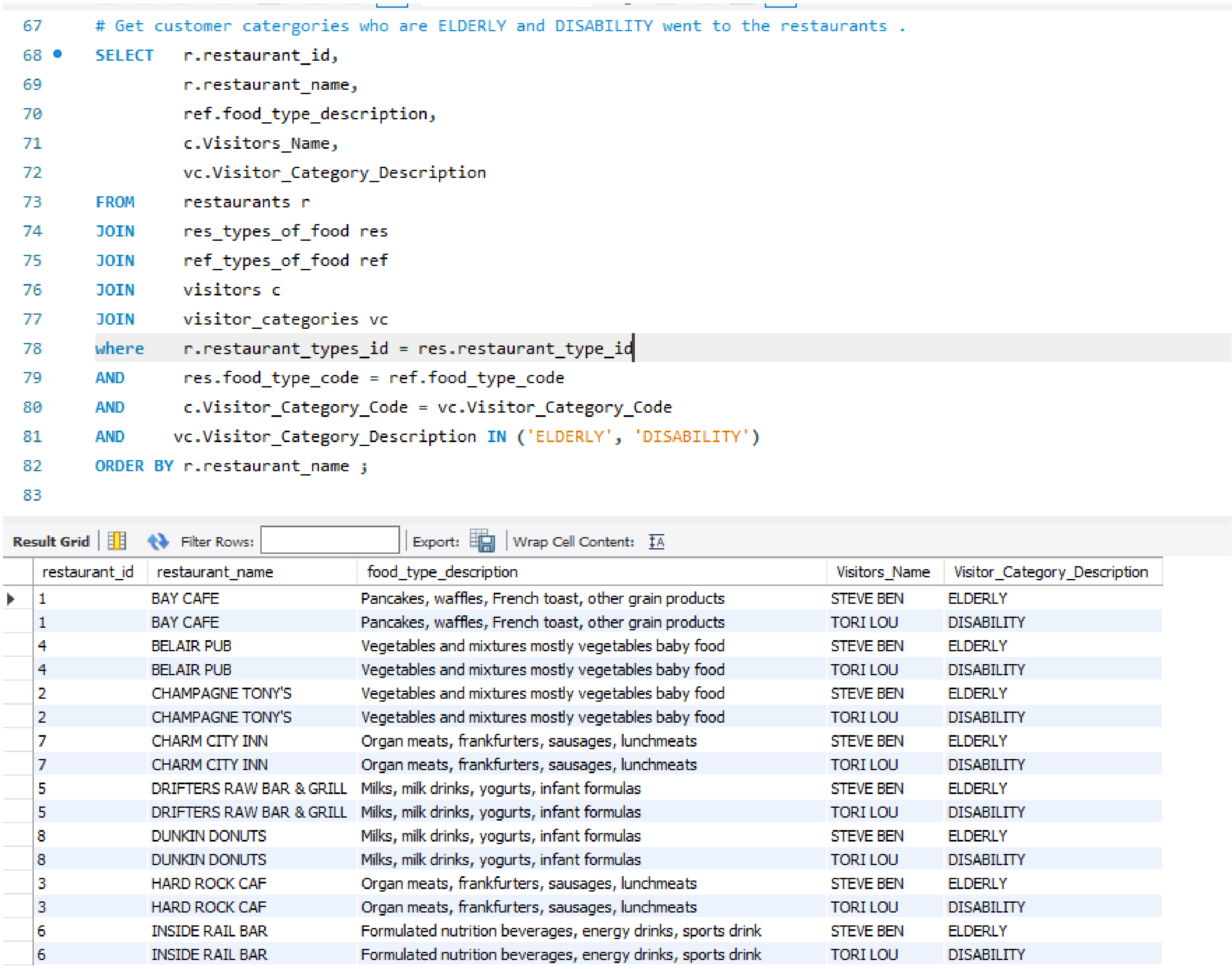


```
# Get Restaurant's food types and other details.
SELECT   r.restaurant_id ,
         r.restaurant_name,
         ref.food_type_description,
         r.other_details
FROM     restaurants r
JOIN     res_types_of_food res
JOIN     ref_types_of_food ref
where    r.restaurant_types_id = res.restaurant_type_id
AND      res.food_type_code = ref.food_type_code
ORDER BY r.restaurant_name ;
```

restaurant_id	restaurant_name	food_type_description	other_details
1	BAY CAFE	Pancakes, waffles, French toast, other grain products	DeliveryTakeoutCurbside pickupSit-down diningOutdoor seatingIndoor diningHeated outdoo...
4	BELAIR PUB	Vegetables and mixtures mostly vegetables baby food	DeliveryTakeoutCurbside pickupSit-down diningOutdoor seatingIndoor diningHeated outdoo...
2	CHAMPAGNE TONY'S	Vegetables and mixtures mostly vegetables baby food	DeliveryTakeoutCurbside pickupSit-down diningOutdoor seatingIndoor diningHeated
7	CHARM CITY INN	Organ meats, frankfurters, sausages, lunchmeats	DeliveryTakeoutCurbside pickupSit-down diningOutdoor seatingIndoor diningHeated
5	DRIFTERS RAW BAR & GRILL	Milks, milk drinks, yogurts, infant formulas	DeliveryTakeoutCurbside pickupSit-down
8	DUNKIN DONUTS	Milks, milk drinks, yogurts, infant formulas	DeliveryTakeoutCurbside pickupSit-down
3	HARD ROCK CAF	Organ meats, frankfurters, sausages, lunchmeats	DeliveryTakeoutCurbside pickupSit-down diningOutdoor seatingIndoor diningHeated
6	INSIDE RAIL BAR	Formulated nutrition beverages, energy drinks, sports drink	DeliveryTakeoutCurbside pickupSit-down

Outcome of running Query #4:

- This query allows the user to get all the food type descriptions from each of the restaurants and other details service that they are providing by JOIN the **restaurants** table with **ref_types_of_food** table.

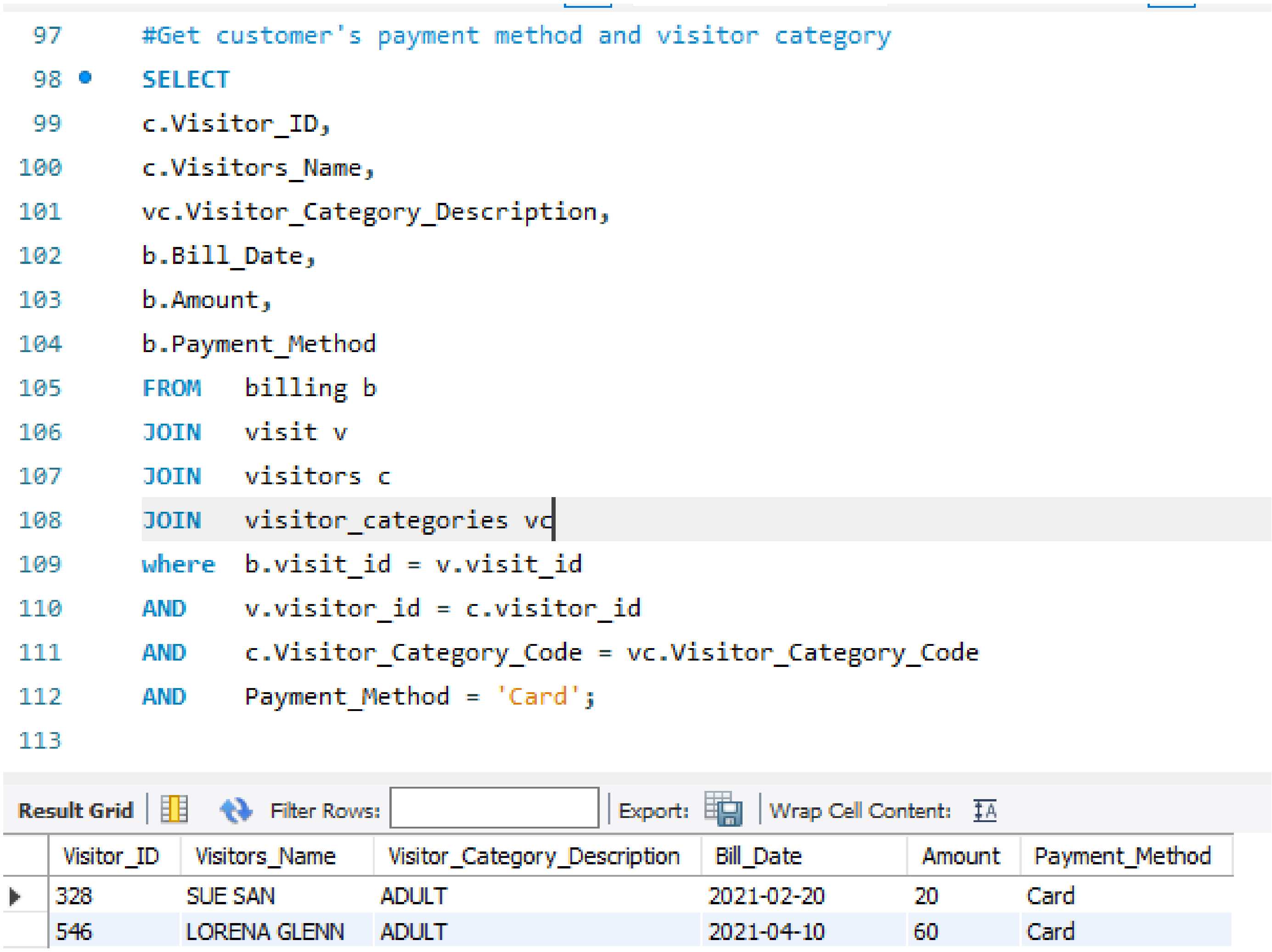


```
# Get customer catergories who are ELDERLY and DISABILITY went to the restaurants .
SELECT   r.restaurant_id,
         r.restaurant_name,
         ref.food_type_description,
         c.Visitors_Name,
         vc.Visitor_Category_Description
FROM     restaurants r
JOIN     res_types_of_food res
JOIN     ref_types_of_food ref
JOIN     visitors c
JOIN     visitor_categories vc
where    r.restaurant_types_id = res.restaurant_type_id
AND      res.food_type_code = ref.food_type_code
AND      c.Visitor_Category_Code = vc.Visitor_Category_Code
AND     vc.Visitor_Category_Description IN ('ELDERLY', 'DISABILITY')
ORDER BY r.restaurant_name ;
```

restaurant_id	restaurant_name	food_type_description	Visitors_Name	Visitor_Category_Description
1	BAY CAFE	Pancakes, waffles, French toast, other grain products	STEVE BEN	ELDERLY
1	BAY CAFE	Pancakes, waffles, French toast, other grain products	TORI LOU	DISABILITY
4	BELAIR PUB	Vegetables and mixtures mostly vegetables baby food	STEVE BEN	ELDERLY
4	BELAIR PUB	Vegetables and mixtures mostly vegetables baby food	TORI LOU	DISABILITY
2	CHAMPAGNE TONY'S	Vegetables and mixtures mostly vegetables baby food	STEVE BEN	ELDERLY
2	CHAMPAGNE TONY'S	Vegetables and mixtures mostly vegetables baby food	TORI LOU	DISABILITY
7	CHARM CITY INN	Organ meats, frankfurters, sausages, lunchmeats	STEVE BEN	ELDERLY
7	CHARM CITY INN	Organ meats, frankfurters, sausages, lunchmeats	TORI LOU	DISABILITY
5	DRIFTERS RAW BAR & GRILL	Milks, milk drinks, yogurts, infant formulas	STEVE BEN	ELDERLY
5	DRIFTERS RAW BAR & GRILL	Milks, milk drinks, yogurts, infant formulas	TORI LOU	DISABILITY
8	DUNKIN DONUTS	Milks, milk drinks, yogurts, infant formulas	STEVE BEN	ELDERLY
8	DUNKIN DONUTS	Milks, milk drinks, yogurts, infant formulas	TORI LOU	DISABILITY
3	HARD ROCK CAF	Organ meats, frankfurters, sausages, lunchmeats	STEVE BEN	ELDERLY
3	HARD ROCK CAF	Organ meats, frankfurters, sausages, lunchmeats	TORI LOU	DISABILITY
6	INSIDE RAIL BAR	Formulated nutrition beverages, energy drinks, sports drink	STEVE BEN	ELDERLY
6	INSIDE RAIL BAR	Formulated nutrition beverages, energy drinks, sports drink	TORI LOU	DISABILITY

Outcome of running Query #5:

- This query will pull the record from **visitor_categories** table that are ELDERLY and DISABILITY, then it will JOIN with **restaurants** and **visitors** table to get the list of restaurants and visitor's name that visited the restaurants with a method IN() from MySQL.



```
#Get customer's payment method and visitor category
SELECT
c.Visitor_ID,
c.Visitors_Name,
vc.Visitor_Category_Description,
b.Bill_Date,
b.Amount,
b.Payment_Method
FROM    billing b
JOIN    visit v
JOIN    visitors c
JOIN    visitor_categories vc
where   b.visit_id = v.visit_id
AND     v.visitor_id = c.visitor_id
AND     c.Visitor_Category_Code = vc.Visitor_Category_Code
AND     Payment_Method = 'Card';

```

Visitor_ID	Visitors_Name	Visitor_Category_Description	Bill_Date	Amount	Payment_Method
328	SUE SAN	ADULT	2021-02-20	20	Card
546	LORENA GLENN	ADULT	2021-04-10	60	Card

Outcome of running Query #6:

- This query will return all the records that used the payment method as ‘Card’ to pay for their meal, and by doing the JOIN method from 4 different tables: **billing, visit, visitors, and visitor_categories**.