

Homework 9: Databases

In this homework, you will be populating a database table with information from Yelp (we have provided the cache data in `yelp_data.txt`) and write code to fetch data from the table.

We have provided the code for the following:

1. To read the cache data (`readDataFromFile()` function)
2. To create the database and setup the connection and cursor (`setUpDatabase()` function)
3. To set up one of the tables, called Categories, in the database (`setUpCategoriesTable()` function): Run the starter code and then check the structure of the Categories table in the DB Browser.

When done with the assignment, your database will have two tables, including the one we have provided and the one you will write code to create and fill.

We have also provided test cases that will pass if the functions are written correctly. You may not edit the test cases in any way.

NOTE: It is okay for the extra credit test case to fail if you do not attempt the extra credit (`test_categorycount_table`)

Tasks

1. **`setUpRestaurantTable()` function:** The function takes three arguments as input: the JSON object, the database cursor, and database connection object. It loads all of the businesses in the JSON object into a table called Restaurants. The function does not return anything.

The table should have the following columns:

- a. `restaurant_id` (datatype: text; primary key)
- b. `name` (datatype: text)
- c. `address` (datatype: text)
- d. `zip` (datatype: text)
- e. `category_id` (datatype: integer)
- f. `rating` (datatype: real)

Expected Table in DB Browser:

	restaurant_id	name	address	zip	category_id	rating
	Filter	Filter	Filter	Filter	Filter	Fil...
1	Xcuu9bTjW62Q36yUkv-JVQ	Dom Bakeries	1305 Washtenaw Rd, Ypsilanti	48197	0	4.5
2	RRtWTpa15xaDDBtKiy8ksw	White Lotus Farms	7217 W Liberty Rd, Ann Arbor	48103	1	5.0
3	JXcDdgg4RZhSyr4ojCyY5A	NeoPapalis	500 E William St, Ann Arbor	48104	2	4.5
4	5yrNbYde_PmHfmNv1fCjDw	Aamani's Smokehouse & Pizza	2529 Dexter Ave, Ann Arbor	48103	3	4.5
5	qWMfzMyMWBxgGR_NAaTsA	Zingerman's Bakehouse	3711 Plaza Dr, Ann Arbor	48108	0	4.5
6	4REtzXpQYy8dVev8RjWbSQ	Mani Osteria & Bar	341 E Liberty St, Ann Arbor	48104	4	4.0
7	8Ww_4J_4pqXh5EFb0bhsTQ	Wolverine State Brewing Co	2019 W Stadium, Ann Arbor	48103	5	4.5
8	fQ8c9S6jitKS5RT6S-ziGA	Zingerman's Delicatessen	422 Detroit St, Ann Arbor	48104	6	4.0
9	-h_zeuiMCWWkSIayhw25EA	Anthony's Gourmet Pizza	1508 N Maple Rd, Ann Arbor	48103	7	4.5
10	yNIYH9041m1JEyRS-N_LNw	Aventura	216 E Washington St, Ann Arbor	48104	8	4.0
11	Lb3kPdkKFJpcbq_JwvXFlg	Pizza Perfect	332 S Ford Blvd, Ypsilanti	48198	7	4.5
12	ZJVhCAjBeRlZLhgRVVJD5Q	Jolly Pumpkin Cafe & Brewery	311 S Main St, Ann Arbor	48104	5	4.0
13	XFlmHOZKR3wTxKpDevhcQ	Detroit Street Filling Station	300 Detroit St, Ann Arbor	48104	9	4.0
14	WQGUTUmR5uge1Z6PZYd4Rw	Mr Spots	808 S State St, Ann Arbor	48104	10	4.0
15	p4Nad3u6PD03cJEn8VtiEw	Tippins Market	4845 Ann Arbor Saline Rd, Ann Arbor	48103	11	4.5
16	qkw4xWWgTufvBs1NcxsFnw	Vinology Restaurant & Event Space	110 S Main St, Ann Arbor	48104	12	4.0
17	s8x9YIRRASt8h_I41VzVCw	Joe's Pizza	1107 S University Ave, Ann Arbor	48104	7	4.5

2. **getRestaurantsInZipcode() function:** The function takes three arguments as input: the zipcode, the database cursor, and database connection object. It selects all the restaurants listed in a particular zipcode and returns a list of tuples. Each tuple contains the restaurant name and address

Expected Output for restaurants in zipcode 48198:

```
('Pizza Perfect', '332 S Ford Blvd')
('Aubree's Pizzeria & Grill', '39 E Cross St')
('Maria's liquor and deli', '3344 S Grove St')
```

3. **getRestaurantsAboveRating() function:** The function takes three arguments as input: the rating value, the database cursor, and database connection object. It selects all the restaurants with a rating greater than or equal to the rating passed to the function and returns a list of tuples. The list is sorted by highest rating and each tuple in the list contains the restaurant name, address, zipcode, and rating.

Expected Output for restaurants with rating >= 4.0:

```
('White Lotus Farms', '7217 W Liberty Rd', '48103', 5.0)
('Dom Bakeries', '1305 Washtenaw Rd', '48197', 4.5)
('NeoPapalis', '500 E William St', '48104', 4.5)
('Aamani's Smokehouse & Pizza', '2529 Dexter Ave', '48103', 4.5)
('Zingerman's Bakehouse', '3711 Plaza Dr', '48108', 4.5)
('Wolverine State Brewing Co', '2019 W Stadium', '48103', 4.5)
('Anthony's Gourmet Pizza', '1508 N Maple Rd', '48103', 4.5)
('Pizza Perfect', '332 S Ford Blvd', '48198', 4.5)
('Tippins Market', '4845 Ann Arbor Saline Rd', '48103', 4.5)
('Joe's Pizza', '1107 S University Ave', '48104', 4.5)
('Jolly Pumpkin Artisan Ales + Kitchen', '2319 Bishop Cr E', '48130', 4.5)
('Stadium Market', '1423 E Stadium Blvd', '48113', 4.5)
('Wings N Things', '3220 Broad St', '48130', 4.5)
('Little Caesars Pizza', '1783 Washtenaw Rd', '48197', 4.5)
('Stadium Deli & Wine Shop', '1956 S Industrial Hwy', '48104', 4.5)
('Mani Osteria & Bar', '341 E Liberty St', '48104', 4.0)
('Zingerman's Delicatessen', '422 Detroit St', '48104', 4.0)
('Aventura', '216 E Washington St', '48104', 4.0)
('Jolly Pumpkin Cafe & Brewery', '311 S Main St', '48104', 4.0)
('Detroit Street Filling Station', '300 Detroit St', '48104', 4.0)
('Mr Spots', '808 S State St', '48104', 4.0)
('Vinology Restaurant & Event Space', '110 S Main St', '48104', 4.0)
('Oscar's Sports & Grill', '6877 S State Rd', '48176', 4.0)
('Hello Faz Pizza', '2259 W Liberty St', '48103', 4.0)
('Marcos Pizza', '4068 Packard St', '48108', 4.0)
('Red Rooster Pizzeria', '51390 Willis Rd', '48111', 4.0)
('Anthony's Gourmet Pizza', '1924 Packard St', '48104', 4.0)
('Maria's liquor and deli', '3344 S Grove St', '48198', 4.0)
```

4. **getRestaurantsAndCategories() function:** The function takes two arguments as input: the database cursor, and database connection object. It returns a list of all of the restaurant names and their categories.

Note: You have to use JOIN for this task

Expected Output:

('Dom Bakeries', 'Bakeries')
('White Lotus Farms', 'Farmers Market')
('NeoPapalis', 'Salad')
('Aamani's Smokehouse & Pizza', 'Smokehouse')
('Zingerman's Bakehouse', 'Bakeries')
('Mani Osteria & Bar', 'Italian')
('Wolverine State Brewing Co', 'Pubs')
('Zingerman's Delicatessen', 'Delis')
('Anthony's Gourmet Pizza', 'Pizza')
('Aventura', 'Tapas Bars')
('Pizza Perfect', 'Pizza')
('Jolly Pumpkin Cafe & Brewery', 'Pubs')
('Detroit Street Filling Station', 'Vegan')
('Mr Spots', 'Sandwiches')
('Tippins Market', 'Beer, Wine & Spirits')
('Vinology Restaurant & Event Space', 'American (New)')
('Joe's Pizza', 'Pizza')
('Jolly Pumpkin Artisan Ales + Kitchen', 'Breweries')
('Stadium Market', 'Beer, Wine & Spirits')
('Ashley's Restaurant', 'Pubs')
('Grizzly Peak Brewing Company', 'Breweries')
('Oscar's Sports & Grill', 'Sports Bars')
('Hello Faz Pizza', 'Pizza')
('The Original Cottage Inn', 'Pizza')
('HopCat', 'American (Traditional)')
('Arbor Brewing Company', 'Breweries')
('Dominick's', 'Italian')
('Gratzi', 'Italian')
('Bigalora Wood Fired Cucina', 'Italian')
('Blue Tractor BBQ & Brewery', 'Breweries')
('Buddy's Pizza - Ann Arbor', 'Pizza')
('South U Pizza', 'Pizza')
('Wings N Things', 'Chicken Wings')
('New York Pizza Depot', 'Pizza')
('Pizza House', 'Pizza')
('Marcos Pizza', 'Pizza')
('Silvio's', 'Pizza')
('Aubree's Pizzeria & Grill', 'Pizza')
('Red Rooster Pizzeria', 'Pizza')
('Pizza Bob's', 'Pizza')
('Session Room', 'Beer Bar')
('Mancino's', 'Pizza')
('Anthony's Gourmet Pizza', 'Pizza')
('Blaze Fast Fire'd Pizza', 'Salad')
('Little Caesars Pizza', 'Pizza')
('Stadium Deli & Wine Shop', 'Delis')
('Palio', 'Italian')
('Backroom Pizza', 'Pizza')
('Mr Pizza', 'Pizza')
('Maria's liquor and deli', 'Pizza')

Grading Rubric

1. setUpRestaurantTable() - 25 points
 - a. 10 points for entering all 50 restaurants in the table
 - b. 5 points for creating all 6 columns in the table
 - c. 10 points for using the correct type for each column
2. getRestaurantsInZipcode() - 10 points
 - a. 5 points for returning the correct number of restaurants in a zipcode
 - b. 5 points for returning the two columns: restaurant name and address
3. getRestaurantsAboveRating() - 10 points
 - a. 5 points for returning a list of tuples sorted by the restaurant rating
 - b. 5 points for returning all four columns: restaurant name, address, zipcode, rating
4. getRestaurantsAndCategories() - 15 points
 - a. 10 points for using a JOIN to get the rows
 - b. 5 points for getting both columns: restaurant names and categories

Git Commits

Make at least 3 git commits before the deadline. Each commit is worth 5 points. Please upload a link to your github repository URL to canvas.

Extra Credit - 6 points

setUpCategoryCountTable() function: The function takes two arguments as input: the database cursor, and database connection object. It creates a table called CategoryCount. The function does not return anything.

The table should have the following two columns:

1. category_title (datatype: text; primary key): This column holds the title of the category e.g. Bakeries, Pubs, Pizza, etc
2. count (datatype: text): This column holds the count of total restaurants belonging to that category

NOTE: You have to use JOIN for this task to get the Categories of all the restaurants

Expected Table in DB Browser:

	category_title ▲	count
	Filter	Filter
1	American (New)	1
2	American (Traditional)	1
3	Bakeries	2
4	Beer Bar	1
5	Beer, Wine & Spirits	2
6	Breweries	4
7	Chicken Wings	1
8	Delis	2
9	Farmers Market	1
10	Italian	5
11	Pizza	20
12	Pubs	3
13	Salad	2
14	Sandwiches	1
15	Smokehouse	1
16	Sports Bars	1
17	Tapas Bars	1
18	Vegan	1