

# CPSC 304 Project Cover Page

Milestone #: 4

Date: Dec 1,2023

Group Number: 123

Name	Student Number	CS Alias (Userid)	Preferred E-mail Address
Kentaro Lim	44267326	klim10	kentarolim10@gmail.com
Riley Baines	98686033	rbaine01	rileybaines@outlook.com
Tony Liu	42641019	tl0226	tl0226yn@gmail.com

By typing our names and student numbers in the above table, we certify that the work in the attached assignment was performed solely by those whose names and student IDs are included above. (In the case of Project Milestone 0, the main purpose of this page is for you to let us know your e-mail address, and then let us assign you to a TA for your project supervisor.)

In addition, we indicate that we are fully aware of the rules and consequences of plagiarism, as set forth by the Department of Computer Science and the University of British Columbia

## Description

This project is an application that allows the user to read and write reviews for restaurants. However, the user is also allowed to read and write reviews for the food items themselves, giving a better understanding on recommendations and foods to avoid. The implementation of the project contains users, restaurants, menu items and reviews, and allows the viewing, creation, modifying and deleting of each of them.

## Changed Schema

- Get rid of the Restaurant\_Rating table. All the ratings were already located in Restaurant\_Review so we felt that the Restaurant\_Rating table was not necessary.
- Restaurant\_Review no longer has a foreign key referencing Restaurant\_Rating.
- Get rid of the Menu\_Item\_Rating table. All the ratings were already located in Menu\_Item\_Review so we felt that the table was not necessary.
- Menu\_Item\_Review no longer has a foreign key referencing Menu\_Item\_Rating.
- Adds a new foreign key into Menu\_Item\_Review (MenuItemName) referencing the name of the menu item being reviewed, as in the Menu\_Item table the primary key also includes the name
- Get rid of the Cost\_Map table. We felt that people could already get a sense of how expensive a food item was based on its price alone.
- Menu\_Item no longer has a foreign key referencing Cost\_Map.
  - This also meant we got rid of price\_category attribute in Menu\_Item

## Copy of Schema

- City(Name, Province\_State, Country)
- Review\_User(UserId, Name, **CityName (NOT NULL)**, **Province\_State(NOT NULL)**)
- Follows(UserId1, UserId2)
- Verified\_User(UserId (NOT NULL), VerificationNumber (UNIQUE))
- Restaurant(BusinessNumber, **StreetName**, **HouseNumber**, **PostalCode**, Name, **OwnerId** (NOT NULL))
- Postal\_Area(PostalCode, Province\_State)
- Address(HouseNumber, StreetName, PostalCode, CityName (NOT NULL))
- Owner(SIN, Name)
- Menu\_Item(**BusinessNumber**, Name, Cost, **Type** (NOT NULL))
- Menu\_Item\_Type(Type)
- offers(**Business Number**, **Type**)
- Review(ReviewNumber, Content, **UserId**)
- Restaurant\_Review(**ReviewNumber** (NOT NULL), **BusinessNumber** (NOT NULL), AmbienceRating, CleanlinessRating, ServiceRating)
- Menu\_Item\_Review(**ReviewNumber** (NOT NULL), **Business Number** (NOT NULL), **Menu\_Item\_Name** (NOT NULL), PresentationRating, TasteRating, PortionSizeRating)

- Helpful\_Tag(TagID, HelpfulnessRating (NOT NULL), ReviewNumber, UserId)

## Screenshots of data in relations after running SQL initialization script

- City

```
SQL> SELECT * FROM CITY
2 ;
```

NAME	PROVINCE_STATE
Vancouver Canada	British Columbia
Richmond Canada	British Columbia
Toronto Canada	Ontario
Ottawa Canada	Ontario
Los Angeles United States of America	California

- Review\_User

```
SQL> SELECT * FROM Review_User;
```

USERID	NAME
user1	John
user2	Jane
user3	Kentaro
user4	Tony
user5	Riley
user6	ChatGPT

CITYNAME	PROVINCE_STATE
Toronto	Ontario
Los Angeles	California
Vancouver	British Columbia
Vancouver	British Columbia
Vancouver	British Columbia
Vancouver	British Columbia

- Follows

```
SQL> SELECT * FROM Follows;
```

USERID1	USERID2
user1	user2
user1	user3
user3	user4
user4	user2
user5	user6

- Verified\_User

```
SQL> SELECT * FROM Verified_User;
```

USERID	VERIFICATIONNUMBER
user1	1
user2	2
user3	3
user4	4
user5	5

- Restaurant\*

```
SQL> SELECT * FROM Restaurant;
```

BUSINESSNUMBER	HOUSENUMBER	STREETNAME	OWNERID
V6B 1M8	123	601 W Hastings Street	123456789
V6T 1Z4	234	2205 Lower Mall	789123456
V6T 1Z4	345	6363 Agronomy Road	456789123
V6T 1Z4	456	6363 Agronomy Road	654321987
K1A 0A9	999	1 Wellington Street	987654321
M5V 3L9	909	290 Bremner Blvd	987654321

- Postal\_Area\*

```
SQL> SELECT * FROM Postal_Area;

POSTALC PROVINCE_STATE
-----
V6T 1Z4 British Columbia
T2X 2L9 Alberta
V6B 1M8 British Columbia
K1A 0A9 Ontario
M5V 3L9 Ontario
```

- Address\*

```
SQL> SELECT * FROM ADDRESS;

HOUSENUMBER STREETNAME POSTALC
-----
CITYNAME
-----
        601 W Hastings Street      V6B 1M8
Vancouver

        2205 Lower Mall            V6T 1Z4
Vancouver

        6363 Agronomy Road         V6T 1Z4
Vancouver

HOUSENUMBER STREETNAME POSTALC
-----
CITYNAME
-----
        290 Bremner Blvd           M5V 3L9
Toronto

        1 Wellington Street       K1A 0A9
Ottawa
```

- Owner

```
SQL> SELECT * FROM OWNER;

SIN NAME
-----
123456789 Bob
456789123 Jick
789123456 Jane
987654321 Bob
654321987 Jane
```

- Menu\_Item

```
SQL> SELECT * FROM Menu_Item;
```

BUSINESSNUMBER	NAME	TYPE	COST
123	Pepperoni Pizza	Pizza	15
234	Cheeseburger	Burgers	19.99
234	Lasagna	Pasta	25

  

BUSINESSNUMBER	NAME	TYPE	COST
345	Dumplings	Dim Sum	30
999	Shrimp wrappers	Dim Sum	7.99
999	California Roll	Sushi	4.99

  

BUSINESSNUMBER	NAME	TYPE	COST
909	Premium Spaghetti	Pasta	40

- Menu\_Item\_Type

```
SQL> SELECT * FROM Menu_Item_Type;
```

TYPE
Burgers
Dim Sum
Pasta
Pizza
Sushi

- offers

```
SQL> SELECT * FROM OFFERS;
```

BUSINESSNUMBER	TYPE
123	Pizza
234	Burgers
234	Pasta
345	Burgers
345	Dim Sum
456	Burgers
909	Pasta
999	Dim Sum
999	Sushi

- Review (1 of 2 screenshots)

```
SQL> SELECT * FROM Review;

REVIEWNUMBER
-----
CONTENT
-----
USERID
-----
          1
it sucks
user1

          2
it tastes good
user3

REVIEWNUMBER
-----
CONTENT
-----
USERID
-----
          3
it is too spicy
user6

          4
excited to try more

REVIEWNUMBER
-----
CONTENT
-----
USERID
-----
user4
```

- Review (2 of 2 screenshots)

```
5
way too overpriced
user5

6

REVIEWNUMBER
-----
CONTENT
-----
USERID
-----
the service was okay
user1

7
restaurant smelled bad
user2

REVIEWNUMBER
-----
CONTENT
-----
USERID
-----

8
i cannot seem to understand why they do not have enough staff
user5

9
I really liked their service
user4

REVIEWNUMBER
-----
CONTENT
-----
USERID
-----

10
The environment was nice
user6
```

- Restaurant\_Review

```
SQL> SELECT * FROM Restaurant_Review;

REVIEWNUMBER BUSINESSNUMBER AMBIENCERATING CLEANLINESSRATING SERVICERATING
-----
6            999            3            4            2
7            234            1            2            5
8            456            1            1            1
9            234            4            3            5
10           123            5            5            5
```



- Menu\_Item\_Review

```
SQL> SELECT * FROM Menu_Item_Review;
```

REVIEWNUMBER	BUSINESSNUMBER	MENUITEMNAME	PRESENTATIONRATING	TASTERATING	PORTIONSIZERATING
1	2	999 Shrimp wrappers	2	2	2
2	5	234 Cheeseburger	5	5	5
3	4	345 Dumplings	2	3	3

  

REVIEWNUMBER	BUSINESSNUMBER	MENUITEMNAME	PRESENTATIONRATING	TASTERATING	PORTIONSIZERATING
4	4	123 Pepperoni Pizza	3	5	5
5	1	909 Premium Spaghetti	2	1	1

- Helpful\_Tag

```
SQL> SELECT * FROM Helpful_Tag;
```

TAGID	HELPFULNESSRATING	REVIEWNUMBER	USERID
1	1	3	user2
2	0	1	user6
3	1	7	user4
4	1	7	user6
5	0	10	user1

\*: POSTALC refers to PostalCode

## All Queries to Satisfy Rubric

### Insert:

File: appService.js

Function: insertRestaurant

Line Number: 988

Query:

```
INSERT INTO Restaurant(BusinessNumber, HouseNumber, StreetName, PostalCode, Name,
OwnerId) VALUES (:businessNumber, :houseNumber, :streetName, :postalCode, :name,
:ownerId)
```

### Delete:

File: appService.js

Function: deleteMenuItem

Line Number: 845

Query:

```
DELETE FROM Menu_Item WHERE BusinessNumber=:businessNumber AND Name=:name;
```

### Update:

File: appService.js

Function: editRestaurant

Line Number: 1095

Query:

```
UPDATE Restaurant
    SET Name=:Name, OwnerId=:OwnerId, HouseNumber=:HouseNumber,
    StreetName=:StreetName, PostalCode=:PostalCode
    WHERE BusinessNumber=:BusinessNumber;
```

### Selection:

File: appService.js

Function: ViewFollows

Line Number:

- AND clause: 604
- OR clause: 605
- No userID2 provided: 611
- No userID1 provided: 617
- No userID's provided: 623

Query:

- AND clause:
  - SELECT UserId1, USERID2 FROM Follows WHERE UserId1 = :UserId1 AND UserId2 = :UserId2;
- OR clause:
  - SELECT UserId1, USERID2 FROM Follows WHERE UserId1 = :UserId1 OR UserId2 = :UserId2;
- No userID2 provided:
  - SELECT UserId1, USERID2 FROM Follows WHERE UserId1 = :UserId1;
- No userID1 provided:
  - SELECT UserId1, USERID2 FROM Follows WHERE UserId2 = :UserId2;
- No userID's provided:
  - SELECT UserId1, USERID2 FROM Follows;

**Projection:**

File: appService.js

Function: viewTables, getAttributes, Project

Line Number: 770, 783-785, 803-804

Query:

```
SELECT table_name FROM user_tables;
SELECT column_name
      FROM all_tab_columns
      WHERE table_name = :tableName;
SELECT ${queryString}
      FROM ${tableName};
```

**Join:**

File: appService.js

Function: searchUserById

Line Number: 447

Query:

```
SELECT * FROM Review_User NATURAL LEFT OUTER JOIN Verified_User WHERE UPPER(UserId)
LIKE '%'|| :UserId || '%';
```

**Aggregation with Group By:**

File: appService.js

Function: viewRestaurantReview

Line Number: 1122-1126

Query:

```
SELECT Re.UserId, U.Name, COUNT(RR.ReviewNumber)
      FROM Restaurant_Review RR, Review Re, Review_User U
```

## University of British Columbia, Vancouver

### Department of Computer Science

---

```
WHERE RR.ReviewNumber = Re.ReviewNumber AND Re.UserId = U.UserId
GROUP BY Re.UserId, U.Name
HAVING Re.UserId = :userId
```

#### Aggregation with Having:

File: appService.js

Function: viewRestaurantReview

Line Number: 1137-1141

Query:

```
SELECT RR.BusinessNumber, R.Name, COUNT(RR.ReviewNumber)
      FROM Restaurant_Review RR, Restaurant R
      WHERE RR.BusinessNumber = R.BusinessNumber
      GROUP BY RR.BusinessNumber, R.Name
      HAVING RR.BusinessNumber = :businessNumber;
```

#### Nested Aggregation with Group By:

File: appService.js

Function: getMostExpensiveMenuItemsByType

Line Number: 1232-1250

Query:

```
SELECT
      Type,
      BusinessNumber,
      Name,
      Cost
      FROM
      Menu_Item
      WHERE
      (Type, Cost) IN (
      SELECT
      Type,
      MAX(Cost) AS MaxCost
      FROM
      Menu_Item
      GROUP BY
      Type
      );
```

#### Division:

File: appService.js

## Department of Computer Science

Line Number: 1264-1276

```
SELECT DISTINCT R.BusinessNumber, R.Name
```

$$);$$

View restaurants

Business number	Name	Owner	Address	City	Delete
123	Bob's Generic Pizza Place	Bob	601 W Hastings Street V6B 1M8	Vancouver	DELETE
345	Orchard Commons	Jick	6363 Agronomy Road V6T 1Z4	Vancouver	DELETE
234	The Point	Jick	2205 Lower Mall V6T 1Z4	Vancouver	DELETE
999	Bob's Underground Food Court	Bob	1 Wellington Street K1A 0A9	Ottawa	DELETE
909	Bob's Sky High Food Court	Bob	290 Bremner Blvd M5V 3L9	Toronto	DELETE
456	McDonalds	Jane	6363 Agronomy Road V6T 1Z4	Vancouver	DELETE

Create new restaurant

During:

View restaurants

Business number	Name	Owner	Address	City	Delete
123	Bob's Generic Pizza Place	Bob	601 W Hastings Street V6B 1M8	Vancouver	DELETE
345	Orchard Commons	Jick	6363 Agronomy Road V6T 1Z4	Vancouver	DELETE
234	The Point	Jick	2205 Lower Mall V6T 1Z4	Vancouver	DELETE
999	Bob's Underground Food Court	Bob	1 Wellington Street K1A 0A9	Ottawa	DELETE
909	Bob's Sky High Food Court	Bob	290 Bremner Blvd M5V 3L9	Toronto	DELETE
456	McDonalds	Jane	6363 Agronomy Road V6T 1Z4	Vancouver	DELETE

Create new restaurant

122

123456789

Bob

188

Keith

K1A 0A9

Ottawa

create

After:

View restaurants

123	Bob's Generic Pizza Place	Bob	601 W Hastings Street V6B 1M8	Vancouver	DELETE
122	Bob	Bob	188 Keith K1A 0A9	Ottawa	DELETE
345	Orchard Commons	Jick	6363 Agronomy Road V6T 1Z4	Vancouver	DELETE
234	The Point	Jick	2205 Lower Mall V6T 1Z4	Vancouver	DELETE
999	Bob's Underground Food Court	Bob	1 Wellington Street K1A 0A9	Ottawa	DELETE
909	Bob's Sky High Food Court	Bob	290 Bremner Blvd M5V 3L9	Toronto	DELETE
456	McDonalds	Jane	6363 Agronomy Road V6T 1Z4	Vancouver	DELETE

Create new restaurant

122

123456789

Bob

188

Keith

K1A 0A9

Ottawa

create

Restaurant created successfully!

Delete:

**Before:**

View Menu Item Reviews

Review Number	Business Number	Menu Item Name	Presentation Rating	Taste Rating	Portion Size Rating	Content
1	999	Shrimp wrappers	2	2	2	it sucks
2	234	Cheeseburger	5	5	5	it tastes good
3	345	Dumplings	4	2	3	it is too spicy
4	123	Pepperoni Pizza	4	3	5	excited to try more
5	909	Premium Spaghetti	1	2	1	way too overpriced

Create New Menu Item Review

Review number cannot already exist

Review Number

Business number must already exist

Business Number

Restaurant must have a menu item with this name

Menu Item Name

Give a Presentation rating of 1, 2, 3, 4 or 5

Presentation Rating

Give a Taste rating of 1, 2, 3, 4 or 5

Taste Rating

Delete Menu Item Review

Review Number

Delete

**During:**

View Menu Item Reviews

Review Number	Business Number	Menu Item Name	Presentation Rating	Taste Rating	Portion Size Rating	Content
1	999	Shrimp wrappers	2	2	2	it sucks
2	234	Cheeseburger	5	5	5	it tastes good
3	345	Dumplings	4	2	3	it is too spicy
4	123	Pepperoni Pizza	4	3	5	excited to try more
5	909	Premium Spaghetti	1	2	1	way too overpriced

Create New Menu Item Review

Review number cannot already exist

Review Number

Business number must already exist

Business Number

Restaurant must have a menu item with this name

Menu Item Name

Give a Presentation rating of 1, 2, 3, 4 or 5

Presentation Rating

Give a Taste rating of 1, 2, 3, 4 or 5

Taste Rating

Delete Menu Item Review

1

Delete

**After:**

View Menu Item Reviews

Review Number	Business Number	Menu Item Name	Presentation Rating	Taste Rating	Portion Size Rating	Content
2	234	Cheeseburger	5	5	5	it tastes good
3	345	Dumplings	4	2	3	it is too spicy
4	123	Pepperoni Pizza	4	3	5	excited to try more
5	909	Premium Spaghetti	1	2	1	way too overpriced

Create New Menu Item Review

Review number cannot already exist

Review Number

Business number must already exist

Business Number

Restaurant must have a menu item with this name

Menu Item Name

Give a Presentation rating of 1, 2, 3, 4 or 5

Presentation Rating

Delete Menu Item Review

1

Delete

Menu item review deleted successfully!

Update:

Before:

View restaurants

Business number	Name	Owner	Address	City	Delete
123	Bob's Generic Pizza Place	Bob	601 W Hastings Street V6B 1M8	Vancouver	DELETE
345	Orchard Commons	Jick	6363 Agronomy Road V6T 1Z4	Vancouver	DELETE
234	The Point	Jick	2205 Lower Mall V6T 1Z4	Vancouver	DELETE
999	Bob's Underground Food Court	Bob	1 Wellington Street K1A 0A9	Ottawa	DELETE
909	Bob's Sky High Food Court	Bob	290 Bremner Blvd M5V 3L9	Toronto	DELETE
456	McDonalds	Jane	6363 Agronomy Road V6T 1Z4	Vancouver	DELETE

Create new restaurant

Business number

Owner SIN

Name

House number

Street name

Postal code

City

create

Update existing restaurant

Business number

Owner SIN

Name

House number

Street name

Postal code

City

update

During:

View restaurants

Business number	Name	Owner	Address	City	Delete
123	Bob's Generic Pizza Place	Bob	601 W Hastings Street V6B 1M8	Vancouver	DELETE
345	Orchard Commons	Jick	6363 Agronomy Road V6T 1Z4	Vancouver	DELETE
234	The Point	Jick	2205 Lower Mall V6T 1Z4	Vancouver	DELETE
999	Bob's Underground Food Court	Bob	1 Wellington Street K1A 0A9	Ottawa	DELETE
909	Bob's Sky High Food Court	Bob	290 Bremner Blvd M5V 3L9	Toronto	DELETE
456	McDonalds	Jane	6363 Agronomy Road V6T 1Z4	Vancouver	DELETE

Create new restaurant

Business number

Owner SIN

Name

House number

Street name

Postal code

City

create

Update existing restaurant

123

123456789

Bobby's Pizza

601

Agronomy

V6T 1Z4

Vancouver

update



After:

View restaurants

Business number	Name	Owner	Address	City	Delete
123	Bobby's Pizza	Bob	601 Agronomy V6T 1Z4	Vancouver	DELETE
345	Orchard Commons	Jick	6363 Agronomy Road V6T 1Z4	Vancouver	DELETE
234	The Point	Jick	2205 Lower Mall V6T 1Z4	Vancouver	DELETE
999	Bob's Underground Food Court	Bob	1 Wellington Street K1A 0A9	Ottawa	DELETE
909	Bob's Sky High Food Court	Bob	290 Bremner Blvd M5V 3L9	Toronto	DELETE
456	McDonalds	Jane	6363 Agronomy Road V6T 1Z4	Vancouver	DELETE

Create new restaurant

Business number

Owner SIN

Name

House number

Street name

Postal code

City

create

Update existing restaurant

123

123456789

Bobby's Pizza

601

Agronomy

V6T 1Z4

Vancouver

update

Restaurant updated successfully!

Selection:

Before:

View Followers and Following

Please leave UserId1 and UserId2 blank if you want to view all entries

Enter userid of user following (UserId1) (case sensitive):

UserId

AND

Enter userid of user being followed (UserId2) (case sensitive):

UserId

View

UserId1

UserId2

***During:***

### View Followers and Following

Please leave UserId1 and UserId2 blank if you want to view all entries

Enter userid of user following (UserId1) (case sensitive):

OR

Enter userid of user being followed (UserId2) (case sensitive):

**View**

UserId1	UserId2
---------	---------

***After:***

### View Followers and Following

Please leave UserId1 and UserId2 blank if you want to view all entries

Enter userid of user following (UserId1) (case sensitive):

OR

Enter userid of user being followed (UserId2) (case sensitive):

**View**

UserId1	UserId2
user1	user2
user1	user3
user4	user2

**Projection:**

**Before:**

**Choose a table, and then select attributes to project on**

Choose a Table:

RESTAURANT\_RATING

Select Table

**Choose attributes**

Select attributes

**During:**

**Choose a table, and then select attributes to project on**

Choose a Table:

RESTAURANT\_RATING

Select Table

**Select attributes from RESTAURANT\_RATING**

AMBIENCERATING

☒

CLEANLINESSRATING

☒

SERVICERATING

☐

OVERALLRATING

☐

Select attributes

**After:**

Choose a table, and then select attributes to project on

Choose a Table:

RESTAURANT\_RATING

Select Table

Select attributes from RESTAURANT\_RATING

AMBIENCERATING ☒

CLEANLINESSRATING ☒

SERVICERATING ☐

OVERALLRATING ☐

Select attributes

AMBIENCERATING	CLEANLINESSRATING
1	1
1	2
3	4
4	3
5	5

**Join**

**Before:**

Search by User ID Search by Name Search by City

Search for users by UserId

Enter UserId below. Leave blank to get all users

UserId

Search

UserId	Name	City	Province/State	VerificationNumber
--------	------	------	----------------	--------------------

***During:***

Search by User ID

Search by Name

Search by City

**Search for users by UserId**

Enter UserId below. Leave blank to get all users

user1

Search

UserId	Name	City	Province/State	VerificationNumber
--------	------	------	----------------	--------------------

***After:***

Search by User ID

Search by Name

Search by City

**Search for users by UserId**

Enter UserId below. Leave blank to get all users

user1

Search

UserId	Name	City	Province/State	VerificationNumber
user1	John	Toronto	Ontario	1

**Aggregation with group by:**

**Before:**

Refresh

View restaurant reviews

ALL

Search by...

Search

Review number	Business Number	User ID	Ambience Rating	Cleanliness Rating	Service Rating	Overall Rating	Content	Delete
---------------	-----------------	---------	-----------------	--------------------	----------------	----------------	---------	--------

**During:**

Refresh

View restaurant reviews

USER ID

user1

Search

Review number	Business Number	User ID	Ambience Rating	Cleanliness Rating	Service Rating	Overall Rating	Content	Delete
---------------	-----------------	---------	-----------------	--------------------	----------------	----------------	---------	--------

**After:**

View restaurant reviews

USER ID

▼

user1

Search

John(user1) has 1 review(s)

Review number	Business Number	User ID	Ambience Rating	Cleanliness Rating	Service Rating	Overall Rating	Content	Delete
6	999	user1	3	4	2	3	the service was okay	DELETE

Successfully loaded table

**Aggregation with having:**

**Before:**

Refresh

View restaurant reviews

ALL

▼

Search by...

Search

Review number	Business Number	User ID	Ambience Rating	Cleanliness Rating	Service Rating	Overall Rating	Content	Delete
---------------	-----------------	---------	-----------------	--------------------	----------------	----------------	---------	--------

***During:***

Refresh

View restaurant reviews

RESTAURANT BUSINESS NUMBER ▾

123

Search

Review number	Business Number	User ID	Ambience Rating	Cleanliness Rating	Service Rating	Overall Rating	Content	Delete
---------------	-----------------	---------	-----------------	--------------------	----------------	----------------	---------	--------

***After:***

Refresh

View restaurant reviews

RESTAURANT BUSINESS NUMBER ▾

123

Search

Bob's Generic Pizza Place(123) has 1 review(s)

Review number	Business Number	User ID	Ambience Rating	Cleanliness Rating	Service Rating	Overall Rating	Content	Delete
10	123	user6	5	5	5	5	The environment was nice	DELETE

Successfully loaded table

**Nested aggregation with group by:**



Before:

View Cheapest Menu Items by Type

Click to view cheapest menu items by type

View Most Expensive Menu Items by Type

Click to view most expensive menu items by type

Type	Business Number	Name	Cost
------	-----------------	------	------

During:

View Cheapest Menu Items by Type

Click to view cheapest menu items by type

View Most Expensive Menu Items by Type

Click to view most expensive menu items by type

Type	Business Number	Name	Cost
------	-----------------	------	------

After:

View Cheapest Menu Items by Type

Click to view cheapest menu items by type

View Most Expensive Menu Items by Type

Click to view most expensive menu items by type

Type	Business Number	Name	Cost
Pizza	123	Pepperoni Pizza	15
Pasta	234	Lasagna	25
Dim Sum	999	Shrimp wrappers	7.99
Sushi	999	California Roll	4.99
Burgers	123	CHeese	15

Division:

**Before:**

**Find Restaurants with all Selected Menu Item Types**

Select Menu Item Types and Click the Button to View Restaurants That Have All Selected Menu Item Types

☐ Pizza ☐ Pasta ☐ Burgers ☐ Dim Sum ☐ Sushi

View Restaurants with All Selected Types

Business Number	Name
-----------------	------

**During:**

**Find Restaurants with all Selected Menu Item Types**

Select Menu Item Types and Click the Button to View Restaurants That Have All Selected Menu Item Types

☐ Pizza ☐ Pasta ☐ Burgers ☒ Dim Sum ☒ Sushi

View Restaurants with All Selected Types

Business Number	Name
-----------------	------

**After:**

**Find Restaurants with all Selected Menu Item Types**

Select Menu Item Types and Click the Button to View Restaurants That Have All Selected Menu Item Types

☐ Pizza ☐ Pasta ☐ Burgers ☒ Dim Sum ☒ Sushi

View Restaurants with All Selected Types

Business Number	Name
345	Orchard Commons
999	Bob's Underground Food Court