

CPSC 304 Project Cover Page

Milestone #: 4

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Group Number: 39

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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

Project Summary:

The domain of this application is culinary and nutrition management, and more specifically, is focused around recipe organization. It encompasses areas such as storing recipes, giving instructions for cooking, and tracking nutritional or dietary information. Moreover, the system also includes community engagement features such as rating or saving recipes, which extend the domain into social and collaborative cooking.

Edits in the recipe_schema.sql:

- added recipeID attribute (FK references Recipe(ID)) to SavedLists entity. Due to this modification, the order of creating the tables and inserting values was modified to avoid error.
- More tuples were added so that all functionalities of the queries can be tested against.

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Final Schema Diagram (Screenshot)

1	Customer			
2	ID	name	email_address	
3	1	Satsuki Onome	satsuki@example.com	
4	2	Dayna Yoon	dayna@example.com	
5	3	Sarah Liang	sarah@example.com	
6	4	cpsc304	cpsc304@example.com	
7	5	ubc cs	ubccs@example.com	
8	100	food critic	food_critic@example.com	
9	200	recipe creator	recipe_creator@example.com	
10	300	just customer	just_customer@example.com	
11				
12	Cuisine			
13	ID	style		
14	1	Japanese		
15	2	Italian		
16	3	Korean		
17	4	Chinese		
18	5	Western		
19				
20	Recipe			
21	ID	title	time_consumed	difficulty
22	1	Pasta Carbonara	25	Medium
23	2	Tteokbokki	20	Easy
24	3	Sushi	45	Hard
25	4	Fried Rice	15	Easy
26	5	Burger	30	Medium
27	6	Pasta Bolognese	25	Medium
28	7	Fried Chicken	40	Medium
29	8	Pizza	45	Hard
30	9	Kimbap	30	Medium
31	10	Dimsum	60	Hard
32				

33	SavedLists			
34	ID	name	ownerID	recipeID
35	1	Favorites	1	1
36	2	To Try	2	2
37	12	Favorites	2	5
38	3	High Protein	3	3
39	13	High Protein	3	4
40	4	Spicy Food	4	1
41	5	Comfort Meals	5	2
42				
43	Instruction			
44	step	recipeID	notes	
45	1	1	Boil pasta until al dente.	
46	2	1	Mix egg and cheese in bowl.	
47	1	2	Boil rice cakes in spicy sauce.	
48	1	3	Prepare sushi rice and roll with fillings.	
49	1	4	Stir-fry rice with vegetables.	
50				
51	Ingredient			
52	ID	name		
53	1	Egg		
54	2	Peanut		
55	3	Pasta Noodle		
56	4	Cheese		
57	5	Soy		
58	6	Tomato		
59	7	Lettuce		
60	8	Garlic		
61	9	Milk		
62	10	Chicken		

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64	Allergen		
65	ID	name	
66	1	Egg	
67	2	Dairy	
68	3	Gluten	
69	4	Peanut	
70	5	Soy	
71			
72	Nutrition 1		
73	name	grams	recipeID
74	Protein	12.5	1
75	Fat	8.3	1
76	Carbs	65.2	2
77	Protein	10	3
78	Fat	5.4	4
79			
80	Nutrition 2		
81	ID	name	recipeID
82	1	Protein	1
83	2	Fat	1
84	3	Carbs	2
85	4	Protein	3
86	5	Fat	4
87			
88	Fresh		
89	ID	location	
90	2	Vancouver Farm Market	
91	5	Vancouver Farm Market	
92	6	BC Tomato Farm	
93	7	Green Leaf Farm	
94	10	Free Range Poultry	

96	Processed		
97	ID	companyName	
98	1	Golden Eggs Farm.	
99	3	Walmart	
100	4	Dairyland Foods	
101	8	Garlic Picks.	
102	9	Happy Cow Dairy	
103			
104	RecipeCreator		
105	ID	cookingHistory	
106	1	Created 10 recipes this month	
107	2	Specializes in Korean dishes	
108	3	Focuses on Italian fusion	
109	4	Tests community recipes	
110	5	New creator learning sushi	
111	200	recipe professional	
112			
113	FoodCritic		
114	ID	ratingHistory	
115	1	Rated 50 recipes in total	
116	2	Prefers spicy foods	
117	3	Writes detailed reviews	
118	4	Cares about presentation	
119	5	Values ingredient quality	
120	100	food criticizing professional	

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122	AddRelation		
123	CustomerID	RecipeID	
124		1	1
125		1	2
126		2	3
127		3	4
128		4	5
129		1	6
130		3	7
131		4	8
132		2	9
133		3	10
134			
178	Contain		
179	RecipeID	IngredientID	
180		1	3
181		1	1
182		1	4
183		2	2
184		4	5
185		6	3
186		6	4
187		6	6
188		6	8
189		8	4
190		7	10
191			
192	RecipeReference		
193	RecipeID	ReferenceID	
194		1	2
195		2	3
196		3	4
197		4	5
198		5	1
199			
200	CanHave		
201	IngredientID	AllergenID	
202		1	1
203		4	2
204		3	3
205		5	5
206		2	4

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135	Rate			
136	CustomerID	RecipID	stars	
137	1	1	5	
138	2	1	5	
139	3	1	4	
140	4	1	5	
141	5	1	5	
142	100	1	5	
143	200	1	4	
144	300	1	5	
145	1	2	4	
146	2	2	3	
147	3	2	5	
148	4	2	4	
149	5	2	4	
150	100	2	3	
151	200	2	4	
152	300	2	3	
153	1	3	2	
154	2	3	2	
155	3	3	3	
156	4	3	1	
157	5	3	2	
158	100	3	2	
159	200	3	1	
160	300	3	2	
161	1	4	4	
162	2	4	4	
163	3	4	3	
164	4	4	5	
165	5	4	4	
166	100	4	4	
167	200	4	5	
168	300	4	3	
169	1	5	5	
170	2	5	5	
171	3	5	4	
172	4	5	5	
173	5	5	5	
174	100	5	5	
175	200	5	5	
176	300	5	4	

1. INSERT

Query: Insert a recipe with customerID, recipelD, title, time_consumed, difficulty, and cuisineID

Table that affects: Recipe, AddRelation

Table that is used: Recipe, AddRelation, Customer (condition checking)

Values: customerID: INTEGER, recipelD: INTEGER, title: CHAR(100), time_consumed: INTEGER, difficulty: CHAR(20), cuisineID: INTEGER

Error handling:

- Unique recipe title. Case-insensitive.
- Unique recipe ID.
- cuisineID and Customer must exist.

sql: [appService.js](#) rows: 127-177

```
```sql
```

```
INSERT INTO Recipe (id, title, time_consumed, difficulty, cuisineID)
```

```
 VALUES (:id, :title, :time_consumed, :difficulty, :cuisineID)
```

```
INSERT INTO AddRelation (CustomerID, RecipelD)
```

```
 VALUES (:customerID, :id)
```

```
...
```

## 2. UPDATE

Query: UPDATE a Customer's name and/or email\_address by selecting an existing Customer.

relation: `Customer`

updated attributes:

name (non-PK), email\_address (non-PK, UNIQUE)

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PK: ID

CK: email\_address

**sql: [appService.js](#) rows: 390-411**

sql:

```
```sql
```

UPDATE Customer

SET name = :newName,

email_address = :newEmail

WHERE ID = :customerID;

...

3. DELETE

Query: Delete an ingredient by ID. Deleting the ingredient also removes related tuples in Fresh, Processed, Contain, and CanHave via ON DELETE CASCADE.

sql:

```
```sql
```

DELETE FROM Ingredient

WHERE ID = :id;

...

**sql: [appService.js](#) rows: 320-332**

### **4. SELECTION**

Query: SELECT FoodCritic or RecipeCreator and/or name. Show all customer information that matches those conditions.(RecipeCreator has cookingHistory and FoodCritic has ratingHistory information shown as well)

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Relation used: Customer(Parent relation), RecipeCreator, FoodCritic

**sql: [appService.js](#) rows: 198-234**

User chooses AND / OR via dropdown → passed in as :andOr:

```sql

```
SELECT C.ID, C.name, C.email_address, RC.cookingHistory AS history
FROM Customer C
JOIN RecipeCreator RC ON C.ID = RC.ID
JOIN FoodCritic FC ON C.ID = FC.ID
ORDER BY C.ID
```

```

with name:

```sql

```
SELECT C.ID, C.name, C.email_address, RC.cookingHistory, FC.ratingHistory
FROM Customer C
LEFT JOIN RecipeCreator RC ON C.ID = RC.ID
LEFT JOIN FoodCritic FC ON C.ID = FC.ID
WHERE C.name = :name
ORDER BY C.ID,
```

```

## **5. PROJECTION**

Query: Show only the selected attributes of the Recipe relation based on user selection.

Relation: Recipe

attributes:

ID: INTEGER

title: CHAR

time\_consumed: INTEGER

difficulty: CHAR

cuisineID: INTEGER

User input: User selects (checkbox) which attributes to display (any subset)

**sql: [appService.js](#) rows: 415-429**

sql:

```
```sql
```

```
SELECT <user-selected attributes>
```

```
FROM Recipe
```

```
...
```

6. JOIN

Query: For a given recipe title and minimum rating, find all customers who rated that recipe with at least that many stars, showing customer info and their rating.

sql: [appService.js](#) rows: 334-357

sql:

```
```sql
```

```
SELECT C.ID, C.name, C.email_address, R.stars
```

```
FROM Customer C
```

```
JOIN Rate R ON C.ID = R.CustomerID
```

```
JOIN Recipe Re ON R.RecipeID = Re.ID
```

```
WHERE LOWER(TRIM(Re.title)) LIKE '%' || LOWER(TRIM(:recipeTitle)) || '%'
```

AND R.stars >= :minStars

ORDER BY C.ID

...

## 7. AGGREGATION with GROUPBY

Query: Find and show the number of recipes in each savedList of the owner, alongside with the savedList ID and name.

Aggregation used: COUNT

sql: [appService.js](#) rows: 236-252

```sql

SELECT

```
S.name AS savedListName,  
C.name AS ownerName,  
COUNT(S.recipeID) AS recipeCount
```

FROM SavedLists S

JOIN Customer C ON S.ownerID = C.ID

GROUP BY S.name, C.name, S.ownerID

ORDER BY C.name, S.name;

...

8. AGGREGATION with HAVING

Query: Find recipe titles whose average rating is greater than or equal to a user-selected threshold.

Relations used: Recipe, Rate

User input: threshold (e.g., 4.0, 4.5)

sql: [appService.js](#) rows: 432-454

sql:

```sql

```
SELECT R.title, AVG(RT.stars) AS avg_rating
FROM Recipe R
JOIN Rate RT ON R.ID = RT.RecipeID
GROUP BY R.ID, R.title
HAVING AVG(RT.stars) >= :threshold
ORDER BY avg_rating DESC;
```

```

9. NESTED AGGREGATION with GROUPBY

Query: Find the cuisine style(s) with the highest average recipe rating.

sql: [appService.js](#) rows: 360-386

sql:

```sql

```
SELECT Cu.style, AVG(R.stars) AS avgCuisineRating
FROM Cuisine Cu
JOIN Recipe Re ON Cu.ID = Re.cuisineID
JOIN Rate R ON R.RecipeID = Re.ID
GROUP BY Cu.style
HAVING AVG(R.stars) >= ALL (
 SELECT AVG(R2.stars)
 FROM Cuisine Cu2
```

```
JOIN Recipe Re2 ON Cu2.ID = Re2.cuisineID
```

```
JOIN Rate R2 ON R2.RecipeID = Re2.ID
```

```
GROUP BY Cu2.style)
```

```
...
```

## 10. DIVISION

Query: Find all recipes that contain all ingredients selected by the user. When no ingredients are selected, it shows all recipes. (up to 5 ingredients can be chosen)  
Case-insensitive.

relations used: Ingredients, Contains, Recipe

**sql: [appService.js](#) rows: 254-303**

```
```sql
```

```
SELECT R.ID, R.title
```

```
FROM Recipe R
```

```
JOIN Contain C ON R.ID = C.RecipeID
```

```
JOIN Ingredient I ON C.IngredientID = I.ID
```

```
WHERE LOWER(TRIM(I.name)) IN (:ing0, :ing1, :ing2, :ing3, :ing4)
```

```
GROUP BY R.ID, R.title
```

```
HAVING COUNT(DISTINCT LOWER(TRIM(I.name))) = :ingCount
```

```
...
```