List of all SQL Queries Used

Insert Operation

- Creating new account with username and password

```
Insert into Users values ('$userID', :bind1, :bind2)", $alltuples
```

Delete Operation

- Deleting Ingredient

```
DELETE FROM Ingredient WHERE ingredientID = '$ingredientID
```

Update Operation

- Updating account info

```
UPDATE Users SET username='$new_username', userPassword='$new_password'
WHERE username='$old_username'
AND userPassword='$old_password
```

Selection

- Filtering recipes by preparation time

```
SELECT Recipe_1.recipeID, Recipe_1.recipeName, Recipe_2.preparationTime, Recipe_3.difficulty
FROM Recipe_1, Recipe_2, Recipe_3
WHERE Recipe_1.recipeName = Recipe_2.recipeName AND Recipe_2.preparationTime =
Recipe_3.preparationTime AND Recipe_2.preparationTime
```

Projection

- Viewing Recipe ID, Recipe Name, Preparation Time, or Difficulty for All Recipes

```
SELECT recipeID
FROM Recipe_1, Recipe_2, Recipe_3
WHERE Recipe_1.recipeName = Recipe_2.recipeName
AND Recipe_2.preparationTime = Recipe_3.preparationTime

SELECT Recipe_1.recipeName
FROM Recipe_1, Recipe_2, Recipe_3
WHERE Recipe_1.recipeName = Recipe_2.recipeName
AND Recipe_2.preparationTime = Recipe_3.preparationTime

SELECT Recipe_2.preparationTime
FROM Recipe_1, Recipe_2, Recipe_3
WHERE Recipe_1.recipeName = Recipe_2.recipeName
AND Recipe_2.preparationTime = Recipe_3.preparationTime

SELECT diffculty
FROM Recipe_1, Recipe_2, Recipe_3
WHERE Recipe_1.recipeName = Recipe_2.recipeName
AND Recipe_2.preparationTime = Recipe_3.preparationTime
```

Join Query

- Listing all ingredients needed for a recipe

```
SELECT Ingredient.ingredientID, ingredientName, amount, unit FROM Recipe_1, Requires_1,
Ingredient
WHERE Recipe_1.recipeID = Requires_1.recipeID
AND Requires_1.ingredientID = Ingredient.ingredientID
AND Recipe_1.recipeName = '$recipeName
```

Aggregation Query

- Finding recipes with the lowest difficulty

```
SELECT R1.recipeID, R1.recipeName, difficulty FROM Recipe_1 R1, Recipe_2 R2, Recipe_3 R3
WHERE R1.recipeName = R2.recipeName
AND R2.preparationTime = R3.preparationTime
AND R3.difficulty = (SELECT MIN(R32.difficulty)
FROM Recipe_3 R32)
```

Nested Aggregation with Group-by

- Counting the number of ingredients used for each recipe

```
SELECT Requires_1.recipeID, recipeName, COUNT(*)
FROM Recipe_1, Requires_1, Ingredient
WHERE Recipe_1.recipeID = Requires_1.recipeID AND Requires_1.ingredientID =
Ingredient.ingredientID
GROUP BY Requires_1.recipeID, recipeName
```

Division Query

- Finding all ingredients that appear in all recipes

```
SELECT ingredientID, ingredientName
FROM Ingredient
WHERE NOT EXISTS
        ((SELECT Recipe_1.recipeID FROM Recipe_1) MINUS (SELECT Requires_1.recipeID FROM
        Requires_1
        WHERE Requires_1.ingredientID = Ingredient.ingredientID))
```