**Project 2 Name:**

For this project you will be using the **RecipesExample Database** from the book. The data diagram is on page 732 of your book or can be found in our course module called “Reference Material”. (100 points)

Not all questions require you to paste a query, so respond appropriately.

**Table relationships**

1. This Database has a linking table which is used to resolve a many to many relationship. What is that table? Measurements (4 points)  
     
   Fill in the blank for the relationship of these tables:  
   Each Recipe uses many Recipe\_Ingredients and  
   Each Ingredient can be used in many Recipe\_Ingredient.
2. Below is the relationship in words for the Measurements table to Ingredients and Measurements table to Recipe\_Ingredients. The relationship is:

* Each ingredients has one unit of measure and each unit of measure can be used by many ingredients.
* Each Recipe\_Ingredients has one unit of measure but each unit of measure can be used by many Recipe\_ingredients.

Put into words the relationships in the RecipesExample Database for

1. the Recipe\_Classes to Recipes both directions

Each recipe class has one Recipe, but each recipe only has one Recipe\_Class.

1. and the Ingedient\_Classes to Ingredients both directions. (4 points)

Each Ingredient\_Classes has many Ingredients, but each Ingredient only has one Ingredient\_Class

**Knowing the size of your tables**

1. If you know the size of the tables you are working with then you know how large your result set can get. **The result set can never be greater than the largest table you are including in your query.**

Start by learning about the number of rows in each of our tables. Write queries to find the number of rows in each table and type the numbers below. (6 points)

|  |  |
| --- | --- |
| Table | Number of rows in result set |
| Recipes | 15 |
| Recipe\_Ingredients | 88 |
| Ingredients | 79 |
| Ingredient\_Classes | 24 |
| Measurements | 26 |
| Recipe\_Classes | 7 |

4. Looking at the numbers in your result sets from the previous question, what is the largest number of rows you could ever have in your results set when writing queries for these tables? (5 points)

a. Recipes, Recipe\_Ingredients and Measurements

88

b. Ingredients and Measurements

79

c. Ingredients and Ingredient\_Classes

79

d. Recipe\_Classes and Recipes

15

e. If you used all 6 tables?

88

So if you had a query that returned more rows then your answer to 3e then you know you didn’t link a table correctly.

**Inner Joins**

**For this project, do not include any ID numbers or SeqNo in the Select statements. Most clients can not relate to sequence numbers, they prefer names and descriptions.**

5. Which ingredients are in each ingredient class? Show names or descriptions. Only two fields in your select statement. Use Ingredient and the Ingredient\_class table and sort by Ingredient class description. (3 points)

select i.IngredientName, ic.IngredientClassDescription

from Ingredients i

join Ingredient\_Classes ic

on i.IngredientClassID = ic.IngredientClassID

order by ic.IngredientClassDescription

6. List the ingredients with their measurements. Sort by measurement description. (3 points)

select i.IngredientName, m.MeasurementDescription

from Ingredients i

join Measurements m

on m.MeasureAmountID = i.MeasureAmountID

order by MeasurementDescription

7. Which Recipes are in each recipe class? List the class description and recipe title. Sort by Recipe\_Classes description. (3 points)

select r.RecipeTitle, rc.RecipeClassDescription

from Recipes r

join Recipe\_Classes rc

on r.RecipeClassID = rc.RecipeClassID

order by rc.RecipeClassDescription

**Table Alias**

8. For this question, you will use an alias for the table names. Unless I specify to use alias, you can use whatever you prefer in the assignments. You can write your query with the word JOIN or not with the word JOIN.

For **every table** in this query use an **alias**. You only need to paste your query once after step e. (20 points)

a. Add table alias to your query from the last question.

b. Add the Recipe\_Ingredients table to your query and add the amount field to your select statement.

c. Add the Ingredients table and add the Ingredients name.

d. Add the Measurements table and add the measurement description.

e. Finally add the ingredient classes table and add the class description.

\*\*\*\*\*\*\*\*\* The columns you wanted selected weren’t specified so I selected them all minus the ID’s of each table, so you could see the relationship with the other tables in the excel file. I also ordered it by Recipe Title as the order wasn’t define, and defining it by description didn’t seem to make sense, unless you meant by ID. I struggled with this one because of the fixed delimitation on all the columns, even just including the first two from query in problem 7. So I used excel and imported the data .rpt within an excel project itself rather than importing it straight from an .rpt. This allowed me to properly format the rows and colums to be readable and correctly truncated. However, I do apologize for it’s “Messyness” as I left the data raw and only formatted the text instead of making it look like an actual recipe book. \*\*\*\*\*\*\*\*\*\*

select r.RecipeTitle, rc.RecipeClassDescription, r.Preparation, r.Notes,

i.IngredientName, m.MeasurementDescription

from Recipes r

join Recipe\_Classes rc

on r.RecipeClassID = rc.RecipeClassID

join Recipe\_Ingredients ri

on r.RecipeID = ri.RecipeID

join Ingredients i

on i.IngredientID = ri.IngredientID

join Measurements m

on m.MeasureAmountID = i.MeasureAmountID

order by r.RecipeTitle

f. Send your output from this query to an excel file, clean up the file and upload it with your answer sheet. Call the file your lastname and project2. When you’re done, make sure it opens in excel. (5 points)

9. Start with the query from the previous step and exclude any Main Course recipes. (5 points)

select r.RecipeTitle, rc.RecipeClassDescription, r.Preparation, r.Notes, i.IngredientName, m.MeasurementDescription

from Recipes r

join Recipe\_Classes rc

on r.RecipeClassID = rc.RecipeClassID

join Recipe\_Ingredients ri

on r.RecipeID = ri.RecipeID

join Ingredients i

on i.IngredientID = ri.IngredientID

join Measurements m

on m.MeasureAmountID = i.MeasureAmountID

where rc.RecipeClassID <> 1

order by r.RecipeTitle

10. Start with the query from step 8(e), change it to only include recipes that contain Onion? (5 points)

select r.RecipeTitle, rc.RecipeClassDescription, r.Preparation, r.Notes,

i.IngredientName, m.MeasurementDescription

from Recipes r

join Recipe\_Classes rc

on r.RecipeClassID = rc.RecipeClassID

join Recipe\_Ingredients ri

on r.RecipeID = ri.RecipeID

join Ingredients i

on i.IngredientID = ri.IngredientID

join Measurements m

on m.MeasureAmountID = i.MeasureAmountID

where i.IngredientID = 2

order by r.RecipeTitle

11. Start with the query from step 8(e), show the recipes that have an ingredient class description that starts with Liq? (5 points)

select r.RecipeTitle, rc.RecipeClassDescription, r.Preparation, r.Notes,

i.IngredientName, m.MeasurementDescription

from Recipes r

join Recipe\_Classes rc

on r.RecipeClassID = rc.RecipeClassID

join Recipe\_Ingredients ri

on r.RecipeID = ri.RecipeID

join Ingredients i

on i.IngredientID = ri.IngredientID

join Measurements m

on m.MeasureAmountID = i.MeasureAmountID

join Ingredient\_Classes ic

on i.IngredientClassID = ic.IngredientClassID

where ic.IngredientClassDescription like ('Liq%')

order by r.RecipeTitle

12. Start with the query from step 8(e), change the query to find any recipe titles involving salsa or nachos. Paste your query here. (5 points)

select r.RecipeTitle, rc.RecipeClassDescription, r.Preparation, r.Notes,

i.IngredientName, m.MeasurementDescription

from Recipes r

join Recipe\_Classes rc

on r.RecipeClassID = rc.RecipeClassID

join Recipe\_Ingredients ri

on r.RecipeID = ri.RecipeID

join Ingredients i

on i.IngredientID = ri.IngredientID

join Measurements m

on m.MeasureAmountID = i.MeasureAmountID

join Ingredient\_Classes ic

on i.IngredientClassID = ic.IngredientClassID

where r.RecipeTitle = '%salsa%' OR r.RecipeTitle like '%nacho%'

order by r.RecipeTitle

**Outer Joins**

13. Looking at the Ingredients and Recipe\_Ingredients tables. The Ingredients table has ingredients that are not used in Recipe\_Ingredients table. Your outer join needs to point to the Ingredients table. (10 points)

a. How many IngredientIDs are in the Ingredient table?

79

b. What is the number of unique IngredientID in the Recipe\_Ingredient table?

60

c. Write a query to show the ingredientname and Amount for only those rows that have a NULL Amount value. This is similar to #2(f) of your chapter 9 assignment.

select i.IngredientName, m.MeasurementDescription

from Recipe\_Ingredients ri

right join Ingredients i

on i.IngredientID = ri.IngredientID

right join Measurements m

on m.MeasureAmountID = i.MeasureAmountID

where i.IngredientID is Null

d. Save your query with the filename of your lastname and query. In SQL, Select the File tab and then Save and place the file in a location that you select with your last name as the file name. Upload this with your answer sheet. (2 points)

14. When you need to write an outer join query in an assignment or project, you first run queries to get row counts, so you know which table to point to. Looking at the ingredient\_classes and the Ingredients table. (10 points)

a. How many unique ingredient class id are there in the Ingredient classes table?

24

b. How many unique ingredient class id are in the Ingredients table?

20

c. Which table has more Ingredient classes?

Ingredient\_Classes

d. How many ingredient classes have no ingredient assigned? Write a query with an outer join to show the ingredientclassdescription and ingredientname and sort by Ingredient Name. Notice the NULL appear at the top of the result set.

select ic.IngredientClassDescription, i.IngredientName

from Ingredients i

right outer join Ingredient\_Classes ic

on i.IngredientClassID = ic.IngredientClassID

order by i.IngredientName

e. Change your query to only show the rows with NULL ingredient name.

select ic.IngredientClassDescription, i.IngredientName

from Ingredients i

right outer join Ingredient\_Classes ic

on i.IngredientClassID = ic.IngredientClassID

where i.IngredientName is Null

order by i.IngredientName

**Union**

15. Create two queries, one that shows any ingredient names that contain the word Chicken and one query that shows any ingredient classes that are Vegetable. You want to create one result set for the two queries so use a UNION. (10 points)

UNIONs can be used even if both queries use the same two tables. I know this query could be written with an OR statement but use the UNION instead.

The columns to include in the result set are IngredientClassesDescription, Ingredient name. Sort by IngredientClassesDescription.

select i.IngredientName, ic.IngredientClassDescription

from Ingredients i

join Ingredient\_Classes ic

on ic.IngredientClassID = i.IngredientClassID

where i.IngredientName like '%chicken%'

UNION

select i.IngredientName, IngredientClassDescription

from Ingredients i

join Ingredient\_Classes ic

on ic.IngredientClassID = i.IngredientClassID

where ic.IngredientClassDescription like '%vegetable%'