Chef Meemaw's Desserts

Aschby, Eric, Sebastian, Ashley, Dominic, Stacey

Group 1

Table of Contents

- Introduction.....3
- Project Specification.....3
- Statement of Objectives.....4
- Requirements.....4
- Design.....5
  - *Schema*.....5
  - *Data Dictionary*.....7
  - *Constraints*.....*9*
  - *Queries*.....*10*
  - *Requirements Matrix*.....*11*
  - *Entity-Relationship Diagram*.....*12*
- Implementation.....13
  - Queries in SQL.....
    - Types SQL queries to create tables and then a paragraph afterward explaining any constraints
  - Triggers.....
  - Test Data.....
    - Images of the tables after insertion of entities to give a baseline for the testing plan
  - Test Plan.....

Meemaw's Dessert Database Project

Implementation Report

Introduction

This document attempts to summarize the requirements, analysis, and design of a database system designed to provide support for new cooking endeavors in the realm of dessert making.

Statement of Objectives

This database system is designed for users to easily search for baking recipes. The database includes ingredients, cooking methods, temperature, serving sizes, yields, flavors, cooking times, preparation times, and allergy information. Users will be able to quickly find any dessert they would like to make with calorie information automatically generated.

Requirements

The requirements list is as follows:

1. The database must provide types of cooking methods, ingredients and kitchen tools
2. The database must provide the flavor profiles and dessert type for each recipe
3. The database must provide time frames for preparation and cooking
4. The database must provide allergy information for the ingredients
5. The database shall specify an author for each recipe.
6. The database shall have a list of ingredients in each recipe.
7. The database shall store dietary information pertaining to the ingredients
8. The database must store information on tools and how to use them
9. The database shall automatically calculate total time for a recipe
10. The databases shall automatically keep track of the number of reviews a recipe has
11. The database must keep track of deleted recipes

Statement of Objectives

This database system is designed for users to easily search for baking recipes. The database includes ingredients, cooking methods, temperature, serving sizes, yields, flavors, cooking times, preparation times, and allergy information. Users will be able to quickly find any dessert they would like to make with calorie information automatically generated.

Requirements

The requirements list is as follows:

1. The database must provide types of cooking methods, ingredients and kitchen tools
2. The database must provide the flavor profiles and dessert type for each recipe
3. The database must provide time frames for preparation and cooking
4. The database must provide allergy information for the ingredients
5. The database shall specify an author and reviewer(s) for each recipe.
6. The database shall have a list of ingredients in each recipe.
7. The database shall store dietary information pertaining to the ingredients
8. The database must store information on tools and how to use them
9. The database shall automatically calculate total time for a recipe
10. The databases shall automatically keep track of the number of reviews a recipe has
11. The database must keep track of deleted recipes

Design

Schema

RECIPE (rID: INT(7), rName: VARCHAR(30), steps: VARCHAR(2000), prepTime: INTEGER(5), cookTime: INTEGER(5), totalTime: INTEGER(5), allergy: VARCHAR(100) references INGREDIENT(allergy), flavor: VARCHAR(100), foodType: VARCHAR(10), calorie: INTEGER(5), reviews INTEGER(5))

Key: {rID}

METHOD(mName: VARCHAR(25), description: VARCHAR(2000))

USE INGREDIENT (iName: VARCHAR(25) references Ingredients (iName), mName: VARCHAR(25) references METHOD (mName))

Key: { iName, mName }

REVIEWER (revID: INTEGER(7), revName: VARCHAR(25))

Key: {revID}

REVIEWED (date: DATE, rID: INTEGER (7) references RECIPE(rID), revID: INT(7) references REVIEVER(revID))

Key: {rID, revID}

AUTHOR (aID: INT(7) , aName: VARCHAR(25), rID: INTEGER (7) REFERENCES Recipe(rID))

Key: {aID, rID}

INGREDIENTS (iName: VARCHAR(30), calorie: INTEGER (5), dietary: VARCHAR(100) allergy: VARCHAR(100))

Key: {iName}

LISTED (iName: VARCHAR(30) REFERENCES Ingredients(iName), rID: INTEGER(7) REFERENCES Recipes(rId))

Key: {iName, rName}

TOOLS (tName: VARCHAR(25), tType: VARCHAR(25), description: VARCHAR (2000))

Key: {tName}

USE_TOOL (tName: VARCHAR(25) REFERENCES Tools(tName), mName: VARCHAR(25) REFERENCES Method(mName))

Key: {tName, mName}

LEGACYRECIPE (rID: INT(7), rName: VARCHAR(30), steps: VARCHAR(2000), prepTime: INTEGER(5), cookTime: INTEGER(5), totalTime: INTEGER(5), allergy: VARCHAR(100) references INGREDIENT(allergy), flavor: VARCHAR(100), foodType: VARCHAR(10), calorie: INTEGER(5), reviews INTEGER(5), dateRemoved DATE)

Data Dictionary

RECIPE

Attribute	Data Type	Defines	Example
rID	INTEGER (7)	Unique identifier for recipes	0000001
rName	VARCHAR (30)	The recipe name	Pumpkin Pie
steps	VARCHAR (2000)	Instruction for the recipe	1. … 2. … 3. ...
prepTime	INT (5)	Time to complete prep work	10
cookTime	INT (5)	Time spent in a pan, oven, etc.	15
totalTime	INT (5)	Prep time + cook time	25
allergy	VARCHAR (100)	Allergy information flag	Milk
flavor	VARCHAR (100)	Flavor profile flag	Sweet
foodType	VARCHAR (10)	Identifier for type of desert	cookie
calorie	INTEGER (5)	Number for calories in the recipe	6156
reviews	INTEGER (5)	Number of reviews	5

LEGACYRECIPE

Attribute	Data Type	Defines	Example
rID	INTEGER (7)	Unique identifier for recipes	0000001
rName	VARCHAR (30)	The recipe name	Pumpkin Pie
steps	VARCHAR (2000)	Instruction for the recipe	4. … 5. … 6. ...
prepTime	INT (5)	Time to complete prep work	10
cookTime	INT (5)	Time spent in a pan, oven, etc.	15
totalTime	INT	Prep time + cook time	25

allergy	VARCHAR (100)	Allergy information flag	Milk
flavor	VARCHAR (100)	Flavor profile flag	Sweet
foodType	VARCHAR (10)	Identifier for type of desert	cookie
calorie	INTEGER (5)	Number for calories in the recipe	6156
reviews	INTEGER (5)	Number of reviews	5
datRemoved	DATE	Date the recipe is taken out of the recipe table	2022-12-10

METHOD

Attribute	Data Type	Defines	Example
mName	VARCHAR (25)	The name of the cooking method	Whisking
desc	VARCHAR (2000)	A description of the technique	“In a rotary motion, use the whisk to stir the contents”

USE INGREDIENT

Attribute	Data Type	Defines	Example
mName	VARCHAR(25)	The name of the cooking method	Whisking
iName	VARCHAR(25)	The name of the ingredient	Chocolate

TOOLS

Attribute	Data Type	Defines	Example
tName	VARCHAR(25)	The name of the tool	Spoon
tType	VARCHAR(25)	Description of the Tool	Scoops and stirs ingredients

USE TOOL

Attribute	Data Type	Defines	Example
tName	VARCHAR(25)	Whisk	Device used for stirring ingredients

mName	VARCHAR(25)	The name of the cooking method	Baking

REVIEWER

Attribute	Data Type	Defines	Example
revID	INTEGER(7)	Unique number to ID the reviewer	1234567
revName	VARCHAR(25)	Name field for reviewer	John Doe

REVIEWED

Attribute	Data Type	Defines	Example
date	DATE	Date the review was left	2022/11/3
rID	INTEGER(7)	Unique number ID for recipe	7654321
revID	INTEGER(7)	Unique number to keep track of who leaves the review	0123456

INGREDIENTS

Attribute	Data Type	Defines	Example
iname	VARCHAR(25)	Name of ingredient	Honey
calorie	INTEGER(5)	Unit of Energy	500
dietary	VARCHAR(100)	Potential Ingredients a person cannot consume due to dietary restrictions	Dairy
allergy	VARCHAR(100)	Potential Ingredients a person cannot consume	Peanuts

LISTED

Attribute	Data Type	Defines	Example
Iname	VARCHAR(25)	Ingredient Name	Flour

rID	INTEGER(7)	Recipe ID	0000009

AUTHOR

Attribute	Data Type	Defines	Example
aID	INTEGER(7)	Unique identifier for authors	3124665
Author_name	VARCHAR(25)	Name of the author	Dwayne Johnson
rID	INTEGER(7)	Unique identifier for recipes	2354323

Constraints

Key Constraints are as follows:

USE INGREDIENT: Must use at least one ingredient and the combination between Ingredients and Method must be unique

AUTHOR: Authors are limited to one recipe

For the relationship Reviewed, the Reviewer and Recipe combination must be unique

For the relationship Listed, the Ingredient, and recipe id combination must be unique

AUTHOR must have unique aID and rID combination

For the relationship UseTool, the tool name and method name combination must be unique

Total time must be the summation of prepTime and cookTime

review in RECIPE table must reflect the number of reviews in REVIEWED with a matching rID

All entities must have unique primary key

Queries

The following queries will satisfy the project requirements:

1) Create INGREDIENTS, METHODS, and TOOLS using attributes as per the Ingredients, methods, and tools schemas, respectively

2) Create a recipe using attributes as per the RECIPE schema.

3) Create the lists of ingredients of a recipe using attributes as per the LISTED schema.

4) Return the ingredient names of all ingredients assigned to a recipe.

5) Create the relationship between methods and tools by creating the USETOOL table

6) Create the relationship between ingredients and methods by creating the USEIINGREDIENT table

7) Return prep and cooking time, allergy , foodType, and flavor of all recipes

8) Create an Author using attributes as per the AUTHOR schema

9) Create a Reviewer of the Recipe as per the Reviewer schema

10) Create the relationship between Reviewer and Recipe by creating the REVIEWED table by using its attributes as references from REVIEWER and RECIPE

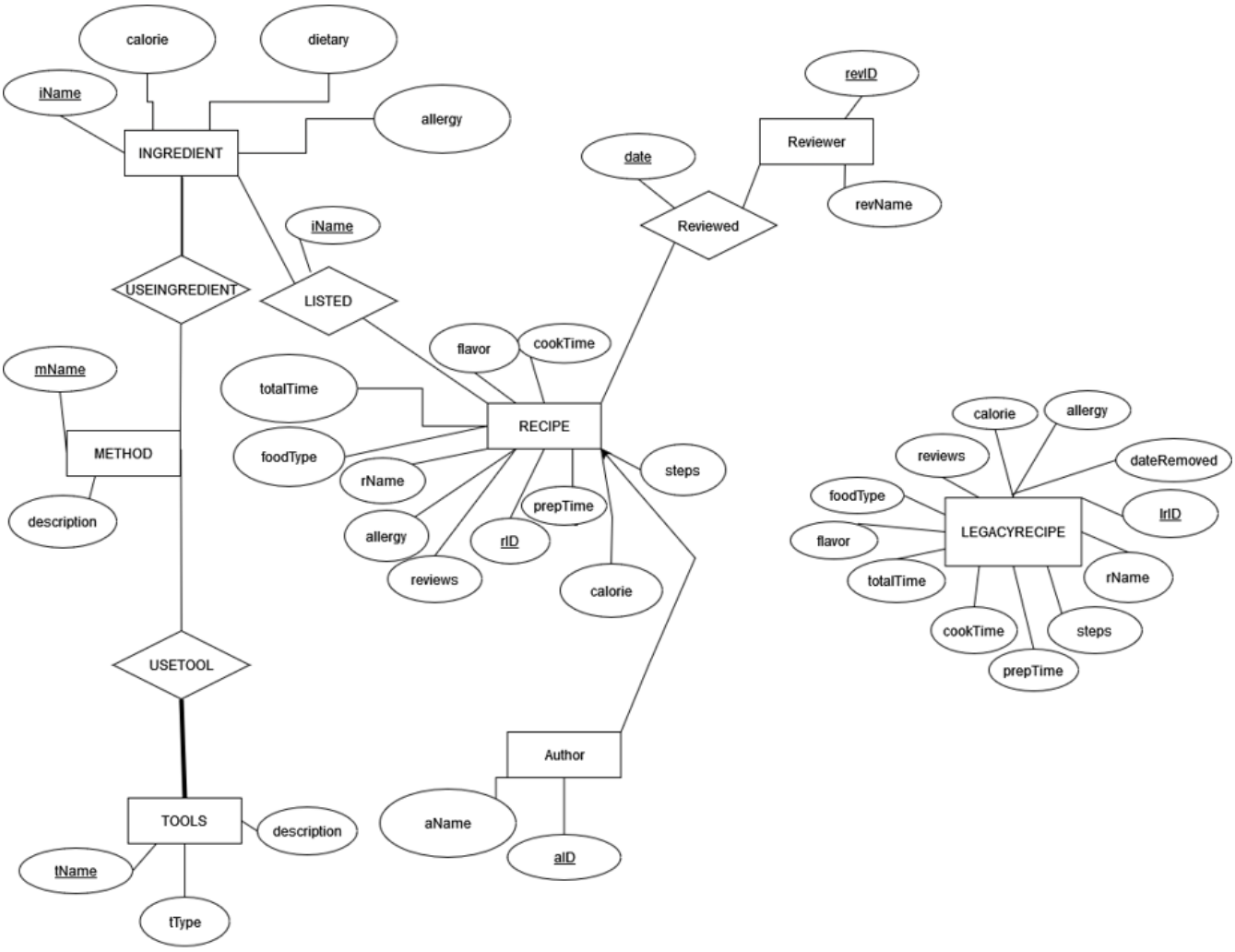
11) Return the author and any reviews associated with the author and recipe

12) Create a legacy recipe with the date of removal attribute and auto generated recipe values from the Recipe Schema as per the Legacy Recipe Schema

Requirements Matrix

Queries	Req 1	Req 2	Req 3	Req 4	Req 4	Req 5	Req 6	Req 7	Req 8	Req 9	Req 10	Req 11
1	x								x			
2		x	x	x			x					
3							X					
4							X					
5	x								X			
6	x						X					
7		X	x	x	x		x	x		x		
8						X						
9						X					X	
10											x	
11						x					x	
12												x

Entity – Relationship Diagram



IMPLEMENTATION

Queries in SQL

The SQL queries here contain some constraints that went through some evolution as a result of testing. The original strategy was to be able to return the preparation time, cook time, allergy information, nutritional information and dessert type based on a flavor profile.

The AUTHOR table contains

CREATE TABLE AUTHOR (

aID INTEGER (7) NOT NULL,

aName VARCHAR(25) NOT NULL,

rID INTEGER (7) NOT NULL, PRIMARY KEY (aID）,

FOREIGN KEY (rID) REFERENCES RECIPE(rID) ON DELETE CASCADE ON UPDATE CASCADE);

Constraints: Single role + participation for aID so every author has one unique ID, participation for rID because an author can make several recipes

Create Table REVIEWED (date DATE, ID INTEGER (7), revID INTEGER (7), FOREIGN KEY (rID) REFERENCES RECIPE (rID) ON DELETE CASCADE ON UPDATE CASCADE, FOREIGN KEY (revID) REFERENCES REVIEWER (revID) ON DELETE CASCADE ON UPDATE CASCADE);

Constraints: Single role + participation for reviewer_ID so every reviewer has one unique ID, participation for rID because an reviewers can review multiple rechipes

CREATE TABLE RECIPE (rID INT(7), rName VARCHAR(30), steps VARCHAR(2000) NOT NULL, prepTime INT(5) NOT NULL, cookTime INT(5) NOT NULL, totalTime INT(5), flavor VARCHAR(6) NOT NULL CHECK (flavor IN(“Sweet”, "Salty", "Savory", "Umami", "Sour", "Bitter", "Spicy")), foodType VARCHAR(10) NOT NULL CHECK (foodType IN("cookie", "cake", "ice cream", "pie", "bread", "muffin", "cobbler", "misc")),reviews INTEGER(5), calorie INTEGER(5), allergy VARCHAR(100), PRIMARY KEY (rID));

Constraints: The RECIPE table contains constraints to make sure the flavor matches a known in the system and if foodType matches a known in the system.

Trigger

Legacy recipe:

CREATE TRIGGER
BEFORE DELETE ON RECIPE
FOR EACH ROW
INSERT INTO LEGACYRECIPE (lrID, rName, steps, prepTime, cookTime, totalTime, flavor, foodType, reviews, calorie, allergy) VALUES (Old.rID, Old.rName, Old.steps, Old.prepTime, Old.cookTime, Old.totalTime, Old.flavor, Old.foodType, Old.reviews, Old.calorie, Old.allergy)
Description: When a recipe is deleted, all it's attributes will be inserted as an object in the legacyRecipe table with an additional attribute, dateRemoved, which is automatically generated by the system of the current date removed

CookTime:
CREATE TRIGGER
BEFORE INSERT ON RECIPE
FOR EACH ROW
SET New.totalTime = New.prepTime + New.cookTime
Description: totalTime is generated by the sum of prepTime and cookTime when a recipe is being added to the Recipe table

Inc:
CREATE TRIGGER
BEFORE INSERT ON REVIEWED
FOR EACH ROW
UPDATE RECIPE SET reviews = reviews-1 WHERE rID = Old.rID
Description: increments the number of reviews in review attribute of Recipe table when a new review is made based on the specific rID

Dec:
CREATE TRIGGER
AFTER DELETE ON REVIEWED
FOR EACH ROW
UPDATE RECIPE SET reviews = reviews+1 WHERE rID = New.rID
Description: Decrements the number of reviews in review attribute of Recipe table when a new review is made based on the specific rID

Test Data

INGREDIENTS

iName	*Calorie*	*Dietary*	*Allergy*
Flour	5	N/A	Wheat Allergy
Milk	10	***Contains Dairy***	***Lactose***
Sugar	15	***High Sugar***	***Keyboard***
Eggs	5	***Contains animal products***	***Aquaphor***
Vanilla Extract	10	***N/A***	***Baking goods***
Baking Soda	2	***N/A***	***Candle***
Water	1	***Hope not***	***N/A***
Vegetable Oil	7	***Oil Product***	***Vegetables***
Condensed Milk	15	***Contains Dairy***	***Lactose***
Coconut Milk	9	***Dairy Alternative***	***Coconuts***
Honey	8	***High Sugar***	***Bees***
Yeast	5	***Yeast Intolerance***	***Bread***
Cheese	10	***Contains Dairy***	***Lactose***
Baking Powder	8	***Hope not***	***Baking***
Salt	9	***High Sodium***	***Sodium***
Chocolate	15	***Sugar***	***Dairy Product***
Banana	5	***Fruit***	***Potassium***
Cream Cheese	15	***Contains Dairy***	***Lactose***
Raspberry	5	***Fruit***	***Fruit Allergy***

AUTHOR

aID	*aName*	*rID*
123	***ERosey***	***001***
124	***Martha Stewart***	***002***
125	***Guy Corvette***	***003***
126	***Gordon Ramsey***	***004***
127	***Rachel Ray***	***005***
128	***Steve Pike***	***006***

RECIPE

rID	*rName*	*Steps*	*prepTime*	*cookTime*	*Flavor*	*foodType*
001	Banana Bread	1. Preheat the oven to 350 degrees F (175 degrees C). Lightly grease a 9x5-inch loaf pan. / 2. Combine flour, baking soda, and salt in a large bowl. Beat brown sugar and butter with an electric mixer in a separate large bowl until smooth. Stir in eggs and mashed bananas until well blended. Stir banana mixture into flour mixture until just combined. Pour batter into the prepared loaf pan. / 3. Bake in the preheated oven until a toothpick inserted into the center comes out clean, about 60 minutes. Let bread cool in pan for 10 minutes, then turn out onto a wire rack to cool completely.	00:15:00	01:00:00	Sweet	Bread
002	Vanilla Cupcakes	1. Preheat the oven to 350 degrees F. Line a 12-cup muffin pan with paper liners. Whisk the flour, baking powder and salt in a bowl. Beat the butter and sugar in a stand mixer fitted with the paddle attachment on medium-high speed until fluffy, about 4 minutes. Beat in the eggs, one at a time, scraping down the bowl as needed. Beat in the vanilla. Reduce the mixer speed to medium low; beat in half of the flour mixture, then all of the milk, then the remaining flour mixture until just combined. / 2. Divide the batter among the muffin cups, filling each three-quarters full. Bake	00:30:00	00:20:00	Sweet	Cupcake

		until a toothpick inserted into the center of a cupcake comes out clean, 18 to 20 minutes, rotating the pan halfway through. Transfer the pan to a rack and let cool 5 minutes, then remove the cupcakes to the rack to cool completely. Top with Frosting. / 3. Whisk the egg whites, sugar and salt in a heatproof bowl set over a saucepan of simmering water (do not let the bowl touch the water) until the mixture is warm and the sugar dissolves. Remove the bowl from the pan; let cool slightly. / 4. Beat the egg white mixture in a stand mixer fitted with the whisk attachment (or with a hand mixer) on medium-high speed until stiff peaks form, 12 to 15 minutes. Beat in the butter a few pieces at a time, then continue beating until smooth.				
003	Cheesecake	1. Position a rack in the middle of the oven and preheat to 350 degrees F. / 2. To make the crust: In a small bowl, mix the cracker crumbs with the melted butter and the sugar together until evenly moistened. Press the crumb mixture onto the bottom of a 9-inch springform pan. Bake the crust until golden brown, about 10 to 12 minutes. Cool the pan on a rack. / 3. Lower the oven temperature to 325 degrees F. In the bowl of a standing mixer fitted with the paddle attachment, or with a hand-held mixer, cream the	00:20:00	01:00:00	Sweet	Cake

		cream cheese on medium speed until smooth. Gradually add the sugar and beat until light and fluffy. (Stop mixing and scrape down the sides of the bowl and beaters as needed.) Beat in the sour cream. Add the eggs, one at a time, beating well after each addition. Stir in the vanilla and cream. Pour the batter into the prepared pan. / 4. Bake until the top of the cheesecake is lightly browned, but the center still jiggles slightly, about 45 minutes. Cool the cake in the pan on a rack. Cover with plastic wrap and refrigerate overnight before serving. / 5. To remove the cake from the pan, run a knife or offset spatula around the edges to release the edges from the pan. Open the springform pan and remove the ring. / 6. Cut the cheesecake into wedges and serve with berries or a raspberry sauce if desired.				
004	Blueberry Muffins	1. Preheat oven to 380 degrees F. / 2. In a large bowl sift together the flour, baking soda, baking powder, and salt and set aside. / 3. In another large bowl, whisk together the sugar, oil, egg and yogurt. Add the dry ingredients reserving 1 tablespoon of the dry ingredients and toss with the blueberries. Stir mixture for a count of 10. Add 1 cup blueberries to mixture and stir 3 more times. Reserve the 1/2 cup	00:25:00	00:25:00	Sweet	Muffin

		of blueberries. / 4. Using a #20 ice cream scoop, add the mixture to greased muffin pans. Sprinkle the remaining 1/2 cup of berries on top of muffins and press down lightly. Place into the oven and increase the temperature to 400 degrees. Bake for 20 to 25 minutes, rotating pan halfway through. Remove from oven and turn out, upside down on tea towel to cool completely. Serve immediately or store in airtight container for 2 to 3 days.				
005	Lemon Bars	1. Make the crust: Position a rack in the middle of the oven and preheat to 350 degrees F. Grease a 9-by-13-inch pan with vegetable oil and line with foil, leaving a 2-inch overhang on all sides; grease the foil with oil. Pulse the butter, flour, both sugars and the salt in a food processor until the dough comes together, about 1 minute. Press evenly into the bottom and about 1/2 inch up the sides of the prepared pan, making sure there are no cracks. Bake until the crust is golden, about 25 minutes. / 2. Meanwhile, make the filling: Whisk the whole eggs and yolks, sugar and flour in a bowl until smooth. Whisk in the lemon zest and juice. Remove the crust from the oven and reduce the temperature to 300 degrees F. Pour the filling over the warm crust and return to the oven.	00:15:00	01:00:00	Tangy	Fruit

		Bake until the filling is just set, 30 to 35 minutes. / 3. Let the bars cool in the pan on a rack, then refrigerate until firm, at least 2 hours. Lift out of the pan using the foil and slice. Dust with sugar before serving.				
006	Mixed Fruit Tart	1. For the crust: In a large bowl, beat together the butter and sugar with an electric mixer on medium-high speed until light and fluffy, about 3 minutes. Add the salt, egg and cream; beat until incorporated. Add the flour and beat until a dough comes together. Form the dough into a disc and then press it evenly into the bottom and up the sides of a 10-inch tart pan with a removable bottom; if necessary, use a piece of plastic wrap to help keep the dough from sticking. Refrigerate until firm, about 1 hour, or freeze for 30 minutes. / 2. Preheat the oven to 350 degrees F. Line the tart crust with foil and fill with pie weights. Bake until the edges of the crust look set and just barely golden, about 15 minutes. Carefully remove the foil and pie weights, and continue to bake until the crust is golden brown all over, about 20 minutes more. Cool completely. / 3. For the filling: In a large bowl, combine the cream cheese, sugar and vanilla, and beat with an electric mixer until soft and very creamy, 1 to 2 minutes. Add the cream and continue	00:40:00	01:15:00	Tart	Fruit

		beating until the mixture holds stiff peaks, stopping occasionally to scrape the bowl with a rubber spatula, 2 to 3 minutes more. / 4. Spoon the cream cheese mixture into the cooled tart shell and smooth with an offset spatula. Top with the berries. / 5. Combine the apricot preserves and a splash of water in a small bowl and microwave until warm, about 45 seconds. Strain through a sieve into another bowl. Gently brush or spoon the apricot glaze over the berries.				

TOOL

tName	*tType*	*Description*
Measuring cups	Utensil	Measuring cups with following sizes: 1/4 cup, 1/3 cup, 1/2 cup, 1 cup
Spoon	Utensil	Used to stir things
Spatula	Utensil	Used to flip things
Whisk	Utensil	Used to mix things'
Rolling Pin	Utensil	Used to roll crust and other food to be flat'
Knife	Utensil	Used to cut things'
Cake Pan	Pan	Put cakes in this to bake'
Baking Sheet	Pan	Put food on this and bake'
Hand Mixer	Utensil	Makes mixing ingredients easier
Pie Plate	Pan	Put pies on this to bake
Tart Pan	Pan	Used to hold tarts

LISTED

IName	*rID*
Banana	001
Flour	001
Sugar	001
Sugar	002
Vanilla Extract	002
Water	002
Cream Cheese	003
Eggs	003
Sugar	003
Baking Soda	004
Baking Powder	004
Salt	004
Flour	005
Eggs	005
Sugar	005
Water	006
Sugar	006
Flour	006

REVIEWER

revID	*revName*
010	John Doe
020	Morgan Freeman
030	Guy Fieri
040	Beyonce
050	Betty White
060	George Washington

REVIEWED

Date	*rID*	*revID*
2020-01-01	001	010
2020-04-03	002	060
2021-05-14	003	040
2022-08-04	004	030
2022-09-04	005	020
2019-07-11	006	050

METHOD

mName	*Description*
Stir	Grab a spoon and move it in a circular motion to mix ingredients together
Measure	Grab a measuring cup of the preferred size and pour in ingredients
Flip	Grab a spatula, shove it under whatever you want to flip and turn it to the opposite side
Mix	Grab a hand mixer, put the metal looking part into a bowl of ingredients, and turn it on to mix the ingredients
Whisking	Grab a whisk, and move in a very quick circular motion to mix ingredients
Roll	Grab a rolling pin, put it on the crust or the food that you want to be flat, and move it back and forth
Cut	Grab a knife, make sure the sharp part is facing the particular thing you want to cut, and move it down vertically to cut
Placing	Put pies on pie plate to bake pies
Food Baking	Put food on baking sheet to bake food
Cake Baking	Put cakes into cake pan to bake cakes
Hold Tarts	Put tarts into tart pan to hold tarts

USE TOOL

tName	*mName*
Spoon	Stir
Measuring cups	Measure
Spatula	Flip
Hand Mixer	Mix
Whisk	Whisking
Rolling Pin	Roll
Knife	Cut
Pie Plate	Placing
Baking Sheet	Food baking
Cake Pan	Cake baking
Tart Pan	Hold tarts

Testing Procedure

The actual results shown in the testing procedure were from the first pass of testing, from which implementation problems were discovered and corrected
1 example of success and failure for each query? Yes sir

Test	Expected Result	Actual Result	Req #
Insert the following cooking method, ingredient, and tool into the Method, Ingredient, and Tool table, respectively: CREATE TABLE INGREDIENT (iName VARCHAR(25), calorie INT(5), dietary VARCHAR(25), allergy VARCHAR(25), PRIMARY_KEY(iName)); **Insert cinnamon into Ingredient table** INSERT INTO INGREDIENT(iName, calorie, dietary, allergy) VALUES ('cinnamon crunch', 12, 'spices', 'cinnamon') CREATE TABLE METHOD(mName VARCHAR(25), description VARCHAR(25), PRIMARY_KEY(mName)); **Insert the method basting into the method table** INSERT INTO METHOD(mName, description) VALUES ('basting', 'a cooking technique that maintains the moisture of the recipe by pouring liquids on top'); CREATE TABLE TOOLS(tName VARCHAR(25), tType VARCHAR(25(, description VARCHAR(25), PRIMARY_KEY(tName)); **Insert tongs into the tool table** INSERT INTO TOOLS(tName, tType, description) VALUES ('tongs', 'Utensil', 'used to carefully hold hot items');	No Error	Success	1

Attempt to enter duplicate record to test company query stability **Insert cinnamon into ingredients table** INSERT INTO INGREDIENT(iName, calorie, dietary, allergy) VALUES ('cinnamon crunch', 12, 'spices', 'cinnamon'); **Insert basting into cooking method** INSERT INTO METHOD(mName, description) VALUES ('basting', 'a cooking technique that maintains the moisture of the recipe by pouring liquids on top'); **Insert tongs into tool table** INSERT INTO TOOLS(tName, tType, description) VALUES ('tongs' ,'Utensil', 'used to carefully hold hot items');	Unsuccessful to duplicate	Failure. Error due to duplicate key	1
Create the table Recipe CREATE TABLE RECIPE(rID INTEGER(7), rName VARCHAR(30), steps VARCHAR(2000), prepTime INT(5), cookTime INT(5), totalTime INT(5), allergy VARCHAR(100), flavor VARCHAR(100) NOT NULL CHECK(flavor IN ("Sweet", "Salty", "Umami", "Sour", "Bitter", "Spicy")), foodType VARCHAR(10) NOT NULL CHECK(flavor IN("cookie", "cake", "ice cream", "pie", "bread", "muffin", "cobbler", "misc")), calorie INT(5), reviews INT(5), PRIMARY KEY(rID)); **Insert pumpkin pie into the recipe table** INSERT INTO RECIPE(rID, rName, steps, prepTime, cookTime, totalTime, allergy, flavor, foodType, calorie, reviews) VALUES	No Error	Success	2

(011,'Pumpkin pie', '1) Grab a orange pumpkin. 2) Grab its guts out without the seeds. 3. Grab 4 cups of sugar, 1 cup of milk, and teaspoon of vanilla extract. 4) Vigorously mix them together. 5) Pour it all in a pre-made pie crust. 6) Throw the uncooked pie into an oven at 350 degrees F for 30 minutes',15, 30, 0, NULL, "Sweet", "pie", 0, 0)			
Attempt to enter pecan pie with foodType value not within specified Strings **Enter pecan pie into the recipe table** INSERT INTO RECIPE(rID, rName, steps, prepTime, cookTime, totalTime, allergy, flavor, foodType, calorie, reviews) VALUES (011,'Pecan pie', '1) Grab a bunch of pecans. 2) Grind it to ashes 3. Grab 4 cups of sugar, 1 cup of milk, and teaspoon of vanilla extract. 4) Vigorously mix them together. 5) Pour it all in a pre-made pie crust. 6) Throw the uncooked pie into an oven at 350 degrees F for 30 minutes',15, 30, 0, NULL, "Sweet", "France", 0, 0)	Error due to constraint of foodType attribute not being one of the existing foodType values	Failure. Unknown column error	2
Enter pecan pie into the recipe table INSERT INTO RECIPE(rID, rName, steps, prepTime, cookTime, totalTime, allergy, flavor, foodType, calorie, reviews) VALUES (011,'Pecan pie', '1) Grab a bunch of pecans. 2) Grind it to ashes 3. Grab 4 cups of sugar, 1 cup of milk, and teaspoon of vanilla extract. 4) Vigorously mix them together. 5) Pour it all in a pre-made pie crust. 6) Throw the uncooked pie into an oven at 350 degrees F for 30 minutes',15, 30, 0, NULL, "Sweet", "pie", 0, 0)	No error	Success	3

Enter strawberry cheesecake into recipe table INSERT INTO RECIPE(rID， rName, steps, prepTime， cookTime， totalTime, allergy, flavor, foodType, calorie, reviews) VALUES (011,'Strawberry Cheesecake', '1) Steal strawberries from someone's garden. 2) mush it into strawberry puree 3. Grab 4 cups of sugar, 1 cup of milk, and cup of cream cheese 4) Vigorously mix them together. 5) Pour it all in a pre-made graham cracker base 6) Throw the cake into an oven at 350 degrees F for 30 minutes','30','30', 0, NULL, "Sweet", "cake", 0, 0)	Syntax Error	Failure. Error due to time frames being inserted as characters instead of INTS	3
Insert celery into ingredient table INSERT INTO INGREDIENT (iName, calorie, dietary, allergy) VALUES ('celery', 3, 'healthy', 'vegetables') The allergy value is 'vegetables'	No error	Success	4
Insert tomato sauce into ingredient table INSERT INTO INGREDIENT (iName, calorie, dietary, allergy) VALUES (3, 'tomato sauce', 'Italian', 'tomato')	Error due to structures being swapped	Failure. Error due to incorrect structures	4
Create Author table and insert valid entry CREATE TABLE AUTHOR(aID INTEGER(7), aName VARCHAR(25) NOT NULL, rID INTEGER(7) NOT NULL, PRIMARY KEY (aID)， FOREIGN KEY (rID) REFERENCES RECIPE(rID） ON DELETE CASCADE ON UPDATE CASCADE);) INSERT INTO AUTHOR(aID， aName, rID）VALUES	No Error	Success	5

(001, “Gordon Ramsey”, 011);			
Insert another entry to the Author table but repeat rID INSERT INTO AUTHOR(aID， aName， rID) VALUES (004, “Martha Stewart”, 011);	Error due to repeated rID . Only one author per recipe is allowed.	Failure. Constraint error	5
Create 2 ingredients and then insert them into the listed table with the same rID INSERT INTO INGREDIENT (iName, calorie, dietary, allergy) VALUES (cheese,10 , ‘dairy’, ‘lactose’) INSERT INTO INGREDIENT (iName, calorie, dietary, allergy) VALUES (cream cheese ,20 , ‘dairy’, ‘lactose’) CREATE TABLE LISTED(iName VARCHAR(25), rID INT(7) PRIMARY KEY(iName, rID), FOREIGN KEY(rID) REFERENCES FROM RECIPE(rID), FOREIGN KEY(iName) REFERENCES FROM INGRDIENTS(iName)); **Insert the two ingredient values into Listed** INSERT INTO LISTED(iName, rID) VALUES (‘cheese’, 011), (‘cream cheese’, 011) **Make the view statement that returns the ingredients of the rID 011** SELECT iName FROM Listed WHERE rID=003	No error	Success	6
Insert an ingredient without the recipe ID INSERT INTO INGREDIENT (iName, calorie, dietary, allergy) VALUES (‘blue strawberries’ ,20 , ‘blue’, ‘fruit’)	There should be an error due to the rID not being present	`#1364 - Field 'rID' doesn't have a default value`	6

INSERT INTO LISTED(iName) VALUES (‘blue strawberries’)			
Create an ingredient with the dietary information being “keto” INSERT INTO INGREDIENT (iName, calorie, dietary, allergy) VALUES (‘Pecan’ ,10 , ‘keto’, ‘fruit’)	No error	Success	7
Attempt to make an ingredient that exceeds the varchar limit in iName INSERT INTO INGREDIENT (iName, calorie, dietary, allergy) VALUES (‘Sambucus canadensis L Cucurbitaceae’ ,10 , ‘keto’, ‘fruit’)	Error	#1406 - Data too long for column 'iName' at row 1	7
Insert a value into the Tool table INSERT INTO TOOLS(tName， tType, description) VALUES (‘blender’, ’Utensil’, ‘used to blend ingredients’);	No Error	Success	8
Insert a value into the Tool table again INSERT INTO TOOLS(tName， tType, description) VALUES ('blender', 'Utensil', 'used to blend ingredients'');	Success	Failure. Syntax error found towards end of insertion statement, extra ‘.	8
Calculate total time upon insertion: INSERT INTO RECIPE (rID， rName, steps, prepTime， cookTime, flavor, foodType） VALUES (010, "Banana Bread", "1. Preheat", 15, 60, "Sweet", "Bread"); SELECT * FROM RECIPE WHERE rID = 2;	New recipe created and cookTime = 75	Success	9
Calculate total time upon insertion: INSERT INTO RECIPE (rID， rName, steps, prepTime， cookTime, flavor, foodType）	Failure due to minutes not being in an accepted integer format	Failure #1265 - Data truncated for column	9

VALUES (011, "Banana Bread", "1. Preheat", '15 minutes', 60, "Sweet", "Bread"); SELECT * FROM RECIPE WHERE rID = 2;		'prepTime' at row 1	
Increment the review count by 1 when a new review is added: SELECT * FROM RECIPE; INSERT INTO REVIEWED(date, rID， revID） VALUES ('2020-01-01', 007, 010) SELECT * FROM RECIPE;	The 'reviews' column in recipe 7 will be increased by 1.	Success	10
Increment the review count by 1 when a new review is added: SELECT * FROM RECIPE; INSERT INTO REVIEWED(date, rID， revID） VALUES ('2020-01-01', 009, 010) SELECT * FROM RECIPE;	Faliure due to foreign key constraint. rID and revID must exist.	#1452 - Cannot add or update a child row: a foreign key constraint fails	10
Decrement the review count by 1 when a new review is added: SELECT * FROM RECIPE; DELETE FROM REVIEWED WHERE rID = 7 AND revID = 50; SELECT * FROM RECIPE;	The 'reviews' column in recipe 7 will be decreased by 1.	Success	10
Decrement the review count by 1 when a new review is added (duplicate query): SELECT * FROM RECIPE; DELETE FROM REVIEWED WHERE rID = 7 AND revID = 50; SELECT * FROM RECIPE;	Failure due to the review not existing in reviewed. Query will work, no rows affected.	Failure: no rows affected	10
Delete a recipe and show it saved in a legacy table: SELECT * FROM LEGACYRECIPE;	A new row inserted into the legacy recipe from the values in the	Success	11

INSERT INTO RECIPE (rID， rName, steps, prepTime， cookTime, flavor, foodType) VALUES (009, "Apple Pie", "Test Case Desc", 10, 15, "Sweet", "Muffin"); SELECT * FROM RECIPE; DELETE FROM RECIPE WHERE rID=9; SELECT * FROM RECIPE; SELECT * FROM LEGACYRECIPE;	selected recipe row.		
Delete a recipe and show it saved in a legacy table (duplicate query: SELECT * FROM LEGACYRECIPE; INSERT INTO RECIPE (rID， rName, steps, prepTime， cookTime, flavor, foodType) VALUES (009, "Apple Pie", "Test Case Desc", 10, 15, "Sweet", "Muffin"); SELECT * FROM RECIPE; DELETE FROM RECIPE WHERE rID=9; SELECT * FROM RECIPE; SELECT * FROM LEGACYRECIPE;	Error: priamry key duplication in legacy table, new entry for recipe stays	#1062 - Duplicate entry '9' for key 'PRIMARY' New recipe inserted, error for legacy table	11

Appendix

Meemaw's Dessert Project Specification

Project Specification

Customer Name: College students

Summary of Need: An encyclopedia of recipes is beneficial to those who are introductory or have little knowledge of cooking. It expands on the knowledge of culinary cuisine in desserts and permeates development of cooking knowledge to college students, especially those who are time-consumed. For those with any interest in the food industry, we seek to provide them with a quick efficient start.

Motivation or Reason for Need: Because of students' tight schedules, they don't have much time to search for recipes for their favorite desserts. Cooking is an important skill for adults to learn; using this database can help students improve their life skills while allowing for more time to study. A traditional cookbook is dated and takes more time to look through. This system should allow for ease of access for students to find exactly what they are looking for.

Nature of Business: The purpose of a recipe book is to provide instructional aide, culinary insight, and best methods into what truly makes an elegant dessert. At the same time, each recipe caters to one's specific flavor preferences, whether it be vegan, lactose-intolerant, etc. The recipe book provides the best desserts and gives students a taste of home for those who are far away. Recipes should contain a wide variety of choices that tailor to students' dietary habits.

Present System: As there are various types of cuisines created and fortified, recipes are essential keys in replicating and noting food dishes. Recipes are coordinated with steps, cooking methods, ingredients, and information for those with dietary restrictions and/or allergens. Every day people have utilized cooking recipes in their daily lives to provide culinary satisfaction as well as explore different cuisines. Due to the vast number of dishes created and continually being made, the implementation of recipes has become an accessible resource to anyone anywhere in the world. Forms of recipes can be in paper form or with the advancement of modern technology, recipes can be accessed universally through the Internet.

Statement of Customer-Perceived Requirements: The Chef MEEMAW system will be accessible online and should provide access to quality recipes, tools to make them, methods required and dietary information.