INF 202

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Final Project Stage 4 Report

Summary

The first step to fixing a problem is to collect information about it. A bakery needs to figure out how to optimize their profits, but has no idea where and how to start. Therefore, variables must be defined in order to form the framework for a database to house all the pertinent information, upon which analysis can be conducted in order to make any necessary management decisions.

Mission Statement

The purpose of this project is to create a database in order to contain the data necessary to optimize profits for a local bakery.

Class Objectives

The data will be collected from the managers, bakers, and sales. It will consist of the following:

- Employee Name
- Employee ID
- Employee Shift
- Employee Job Title
- Product Information
- Ingredient Information
- Transaction Information
- Recipe Information

The purpose is to have the database integrated within the business itself so that the extra effort required to update the database is streamlined and minimized.

1. eFile

Attributes – employeeID (PK), fName, lName, Shift

2. Recipe

Attributes – productID (PK), ingID (FK), iQuantity, bTime, bCap, sLife

3. Transaction

Attributes – transactionID (PK), employeeID (FK), pID (FK), tDate, Quantity

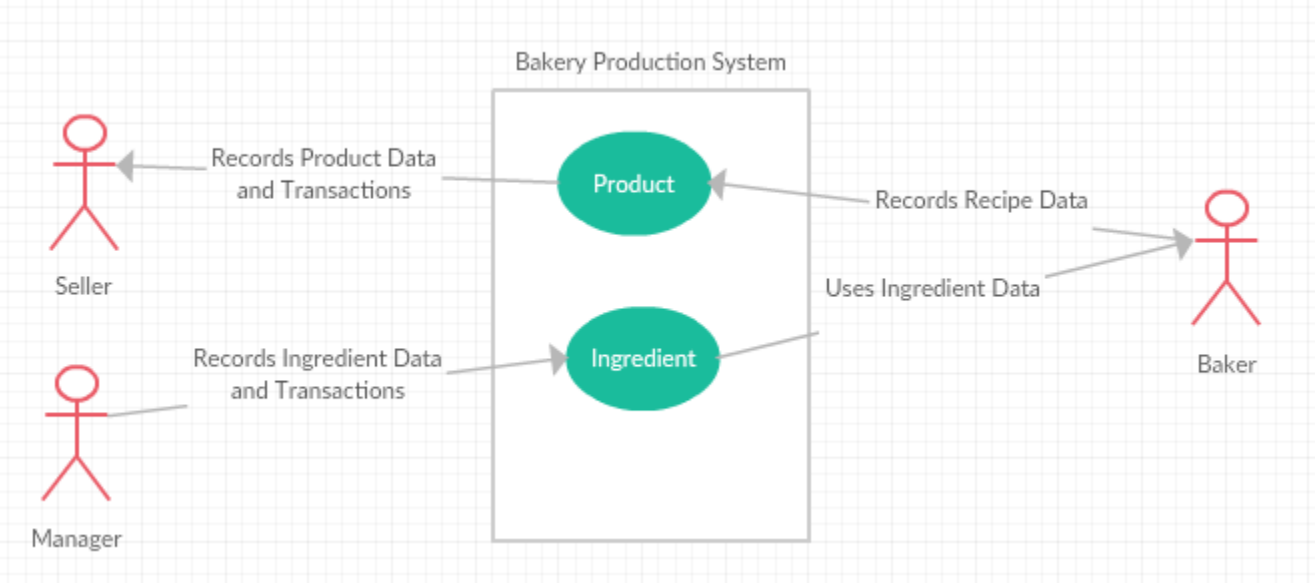
4. Ingredient

Attributes – ingID (PK), employeeID (FK), iCost, iUnit

5. Product

Attributes – productID (PK), employeeID (FK), pName, sPrice

Use Case Diagram



Use Case Definitions

1. Use Case: Records Ingredient Data and Transactions

Definition: Manager updates Ingredient table. Manager records ingredient transactions in Transaction table.

2. Use Case: Use Ingredient Data

Definition: Baker uses Ingredient data to make Products

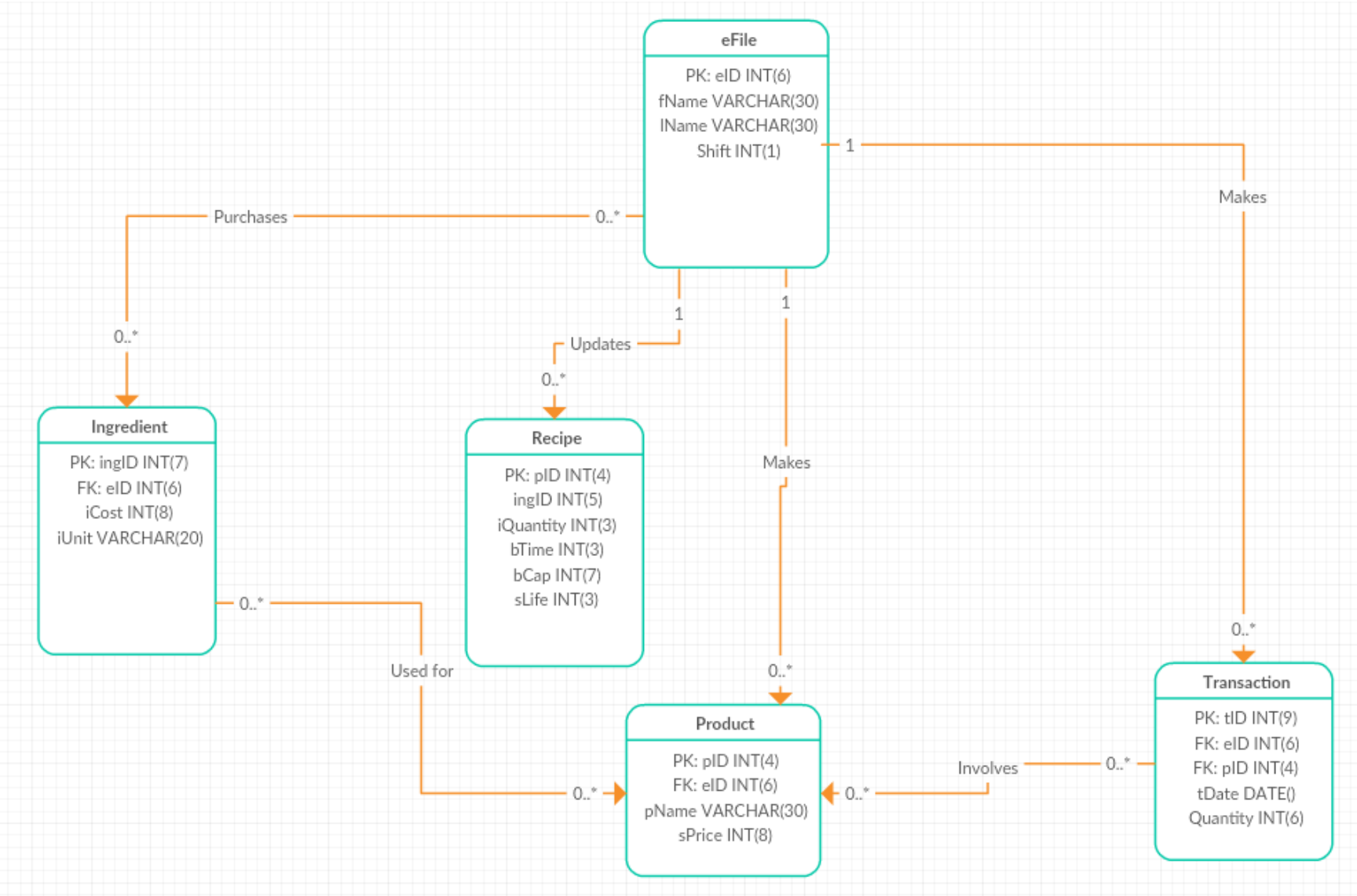
3. Use Case: Records Recipe Data

Definition: Baker updates Recipe table with information for each product

4. Use Case: Records Product Data and Transactions

Definition: Seller updates Product table. Seller records ingredient transactions in Transaction table.

Data Model

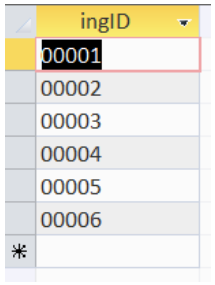

eFile
PK: eID INT(6)
fName VARCHAR(30)
lName VARCHAR(30)
Shift INT(1)
Purchases
0..*
0..*
1
Makes
1
Updates
1
0..*
0..*
Ingredient
PK: ingID INT(7)
FK: eID INT(6)
iCost INT(8)
iUnit VARCHAR(20)
Recipe
PK: pID INT(4)
ingID INT(5)
iQuantity INT(3)
bTime INT(3)
bCap INT(7)
sLife INT(3)
Makes
0..*
Used for
0..*
0..*
Product
PK: pID INT(4)
FK: eID INT(6)
pName VARCHAR(30)
sPrice INT(8)
Involves
0..*
0..*
0..*
Transaction
PK: tID INT(9)
FK: eID INT(6)
FK: pID INT(4)
tDate DATE()
Quantity INT(6)

Queries

What are all the ingredient IDs in the database?

SELECT Ingredient.ingID

FROM Ingredient;

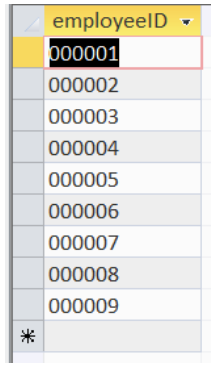


ingID
00001
00002
00003
00004
00005
00006

What are all the product IDs in the database?

SELECT Efile.employeeID

FROM Efile;

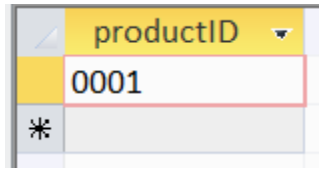


employeeID
000001
000002
000003
000004
000005
000006
000007
000008
000009

What is the product ID of Chocolate Cake?

SELECT Product.productID

FROM Product WHERE productName = "Chocolate Cake";



What is the product ID of Doughnut?

SELECT Product.productID

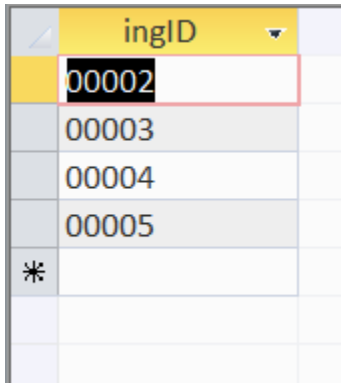
FROM Product WHERE productName = "Doughnut";

What are the ingredient IDs of all ingredients that use ounce as a unit ordered by ingredient ID in ascending order?

SELECT Ingredient.ingID

FROM Ingredient WHERE iUnit = "ounce"

ORDER BY Ingredient.ingID;



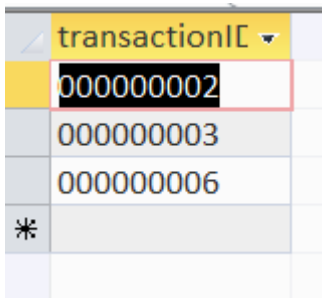
ingID
00002
00003
00004
00005
*

What are the transaction IDs of all transactions that are sell orders ordered by transaction ID in ascending order?

SELECT Transaction.transactionID

FROM [Transaction] WHERE tTYPE = "sell"

ORDER BY Transaction.transactionID;



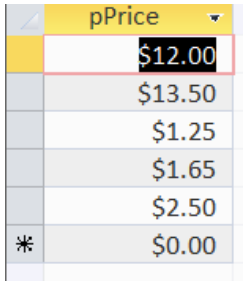
transactionID
000000002
000000003
000000006
*

Generate a list of product prices that are more expensive than the cost of a doughnut.

SELECT Product.pPrice FROM Product WHERE Product.pPrice >

(SELECT Product.pPrice

FROM Product WHERE productName = "Doughnut");



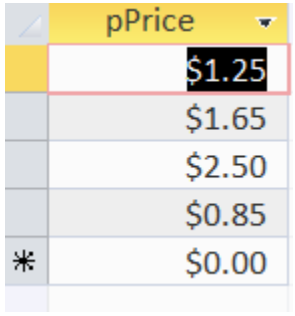
pPrice
$12.00
$13.50
$1.25
$1.65
$2.50
$0.00

Generate a list of product prices that are cheaper than the cost of Chocolate Cake.

SELECT Product.pPrice FROM Product WHERE Product.pPrice <

(SELECT Product.pPrice

FROM Product WHERE productName = "Chocolate Cake");

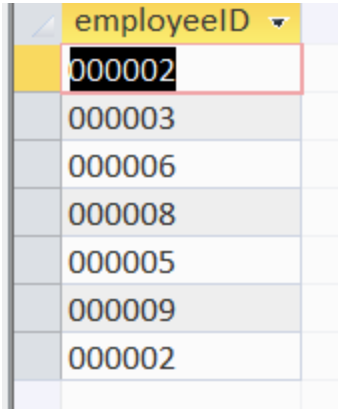


pPrice
$1.25
$1.65
$2.50
$0.85
$0.00

Generate a list of all employee IDs that have also participated in Transactions.

SELECT Efile.employeeID

FROM Efile RIGHT JOIN Transaction ON Transaction.employeeID = Efile.employeeID;



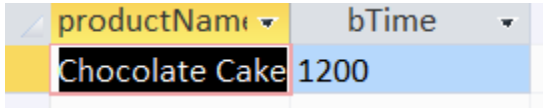
employeeID
000002
000003
000006
000008
000005
000009
000002

What is the bake time of Chocolate Cake, making sure to eliminate duplicate results?

SELECT DISTINCT Product.productName, bTime

FROM Product LEFT JOIN Recipe ON Recipe.productID = Product.productID

WHERE Product.productName = "Chocolate Cake";



productNam	bTime
Chocolate Cake	1200