DUNKIN'
DONUTS®

AMERICA RUNS ON DUNKIN'®

Database Design Proposal
Bridget Leahy

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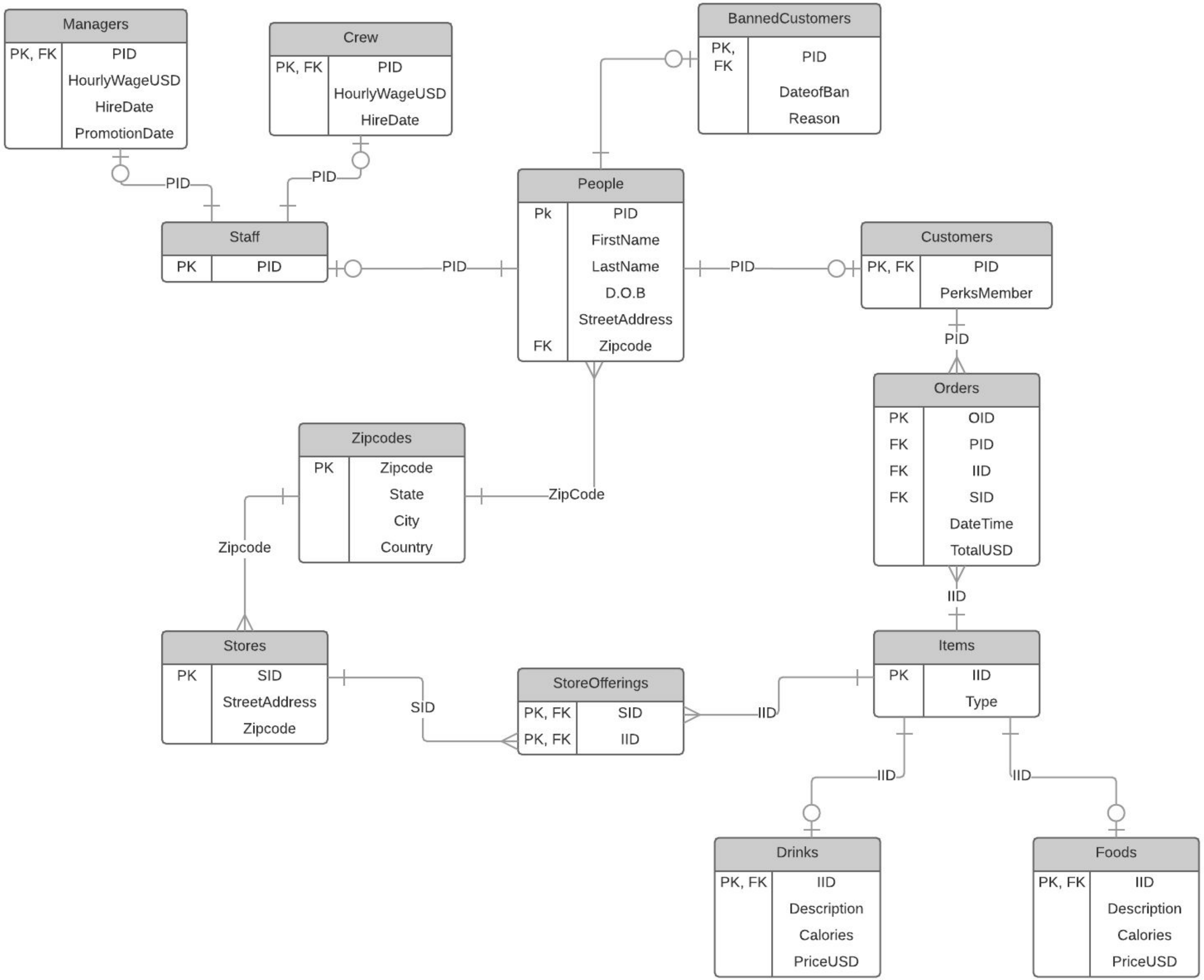
Executive Summary

The Dunkin Donuts database has been created to keep track of all aspects of the operation of this successful company.

The following paper provides an information regarding the database as well as indications of its uses. The ER diagram, create statements for tables, and their sample data are first presented. Following this, uses include creating queries, views, stored procedures, reports, and triggers are designed and tested. The function of the database is to provide accurate and relevant information on all bases of the company - from customers, to food, to store locations, to managers and staff.

America runs on Dunkin and Dunkin runs on its database.

E/R Diagram



Managers

PK, FK	PID
	HourlyWageUSD
	HireDate
	PromotionDate

Crew

PK, FK	PID
	HourlyWageUSD
	HireDate

BannedCustomers

PK, FK	PID
	DateofBan
	Reason

Staff

PK	PID

People

Pk	PID
	FirstName
	LastName
	D.O.B
	StreetAddress
FK	Zipcode

Customers

PK, FK	PID
	PerksMember

Orders

PK	OID
FK	PID
FK	IID
FK	SID
	DateTime
	TotalUSD

Zipcodes

PK	Zipcode
	State
	City
	Country

Stores

PK	SID
	StreetAddress
	Zipcode

StoreOfferings

PK, FK	SID
PK, FK	IID

Items

PK	IID
	Type

Drinks

PK, FK	IID
	Description
	Calories
	PriceUSD

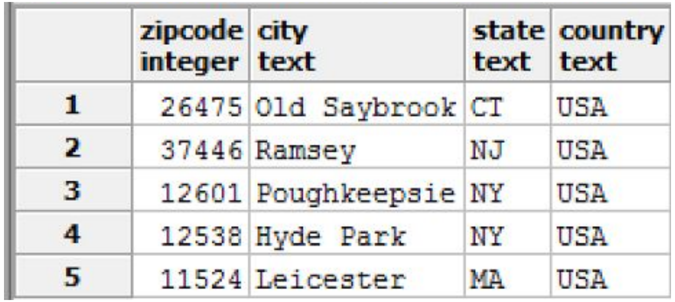
Foods

PK, FK	IID
	Description
	Calories
	PriceUSD

Zipcode Table

The table containing all zipcodes for stores and people, whether they are customers, managers, or crew. There is a city, state, and country for each unique zipcode.

```
DROP TABLE IF EXISTS ZipCode;
CREATE TABLE ZipCode (
    ZipCode int not null,
    City text,
    State text,
    Country text,
    primary key(ZipCode)
);
```



	zipcode integer	city text	state text	country text
1	26475	Old Saybrook	CT	USA
2	37446	Ramsey	NJ	USA
3	12601	Poughkeepsie	NY	USA
4	12538	Hyde Park	NY	USA
5	11524	Leicester	MA	USA

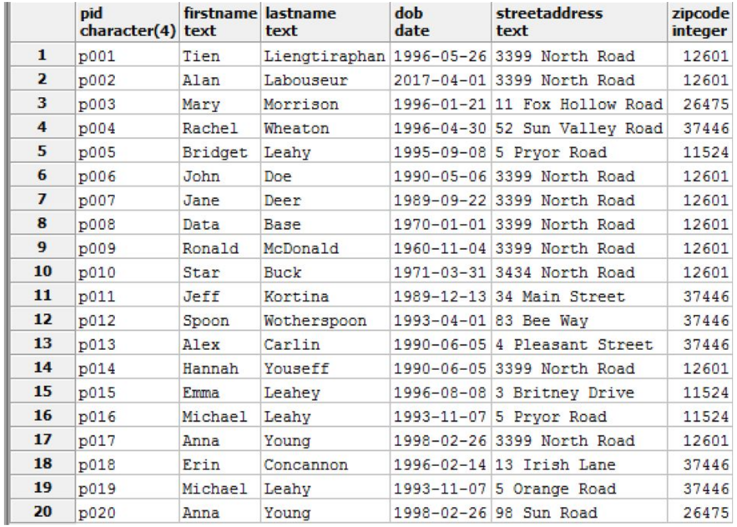
Functional Dependencies:
Zipcode → city, state, country

People Table

Table containing information on any customer, banned customer, crew, or manager. Gives the person's name, date of birth, street address, and zip code based on their unique ID.

```
Functional Dependencies:
     PID → FirstName, LastName, DOB,
           StreetAddress, ZipCode
```

```
DROP TABLE IF EXISTS People;
     CREATE TABLE People (
     PID char(4) not null,
     FirstName text,
     LastName text,
     DOB date,
     StreetAddress text,
     ZipCode int not null references ZipCode(ZipCode),
     primary key(PID)
);
```



	pid character(4)	firstname text	lastname text	dob date	streetaddress text	zipcode integer
1	p001	Tien	Liengtiraphan	1996-05-26	3399 North Road	12601
2	p002	Alan	Labouseur	2017-04-01	3399 North Road	12601
3	p003	Mary	Morrison	1996-01-21	11 Fox Hollow Road	26475
4	p004	Rachel	Wheaton	1996-04-30	52 Sun Valley Road	37446
5	p005	Bridget	Leahy	1995-09-08	5 Pryor Road	11524
6	p006	John	Doe	1990-05-06	3399 North Road	12601
7	p007	Jane	Deer	1989-09-22	3399 North Road	12601
8	p008	Data	Base	1970-01-01	3399 North Road	12601
9	p009	Ronald	McDonald	1960-11-04	3399 North Road	12601
10	p010	Star	Buck	1971-03-31	3434 North Road	12601
11	p011	Jeff	Kortina	1989-12-13	34 Main Street	37446
12	p012	Spoon	Wotherspoon	1993-04-01	83 Bee Way	37446
13	p013	Alex	Carlin	1990-06-05	4 Pleasant Street	37446
14	p014	Hannah	Youseff	1990-06-05	3399 North Road	12601
15	p015	Emma	Leahey	1996-08-08	3 Britney Drive	11524
16	p016	Michael	Leahy	1993-11-07	5 Pryor Road	11524
17	p017	Anna	Young	1998-02-26	3399 North Road	12601
18	p018	Erin	Concannon	1996-02-14	13 Irish Lane	37446
19	p019	Michael	Leahy	1993-11-07	5 Orange Road	37446
20	p020	Anna	Young	1998-02-26	98 Sun Road	26475

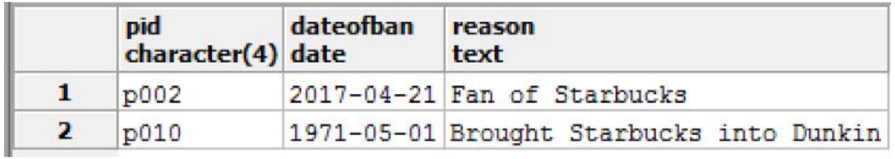
Banned Customers Table

Any person who has been banned from Dunkin Donuts will be listed here, along with the date of their ban and the reason for the ban. The person must already exist in the People table to be banned.

```
DROP TABLE IF EXISTS BannedCustomers;
CREATE TABLE BannedCustomers (
     PID char(4) not null references People(PID),
     DateofBan date,
     Reason text,
     primary key (PID)
);
```

Functional Dependencies:

PID → DateofBan, Reason

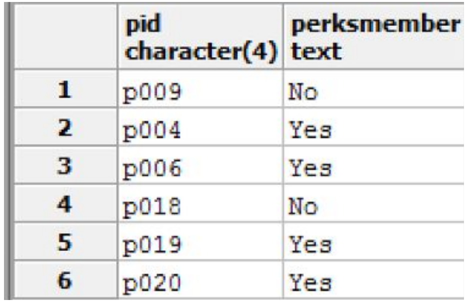


	pid character(4)	dateofban date	reason text
1	p002	2017-04-21	Fan of Starbucks
2	p010	1971-05-01	Brought Starbucks into Dunkin

Customers Table

The customers table contains all of Dunkin’s customers and whether it is true or false that they are a DD Perks Member. A person cannot be in the customer table unless they exist in the people table. If information regarding whether or not the customers is a perks member is not given, the default value will be false.

```
DROP TABLE IF EXISTS Customers;
CREATE TABLE Customers (
     PID char(4) not null references People(PID),
     PerksMember text DEFAULT 'No',
     primary key(PID),
     CONSTRAINT CHK_Member CHECK
          (PerksMember='Yes' OR PerksMember='No')
);
```



	pid character(4)	perksmember text
1	p009	No
2	p004	Yes
3	p006	Yes
4	p018	No
5	p019	Yes
6	p020	Yes

Functional Dependency: PID → PerksMember

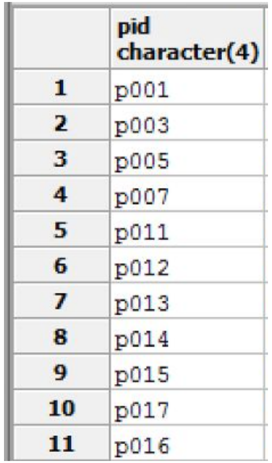
Staff Table

The staff table contains the ID of each staff memeber. A person cannot be added to the staff table unless they already are in the person table.

```
DROP TABLE IF EXISTS Staff;
CREATE TABLE Staff (
     PID char(4) not null references People(PID),
     primary key(PID)
);
```

Functional Dependency:

PID →



	pid character(4)
1	p001
2	p003
3	p005
4	p007
5	p011
6	p012
7	p013
8	p014
9	p015
10	p017
11	p016

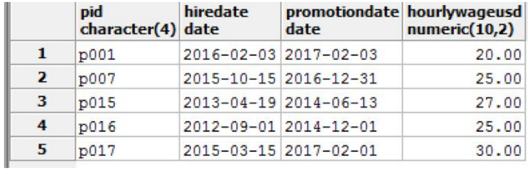
Managers Table

The managers table contains the person ID, hourly wage in U.S. dollars, original hire date, promotion to manager date, and hourly wage for each manager. A person cannot be added to the manager table unless he or she already exists in the staff table. The person must be a manager for the same store as in the staff table. A person cannot be promoted at a date earlier than he or she is hired and if salary is not entered, the default value will be $20 based on company policy.

```
DROP TABLE IF EXISTS Managers;
CREATE TABLE Managers (
     PID char(4) not null references Staff(PID),
     HireDate date,
     PromotionDate date,
     HourlyWageUSD numeric(10,2) default 20.00,
     primary key(PID),
     check (PromotionDate > HireDate)
);
```

Functional Dependencies:

PID → HireDate, PromotionDate, HourlyWageUSD

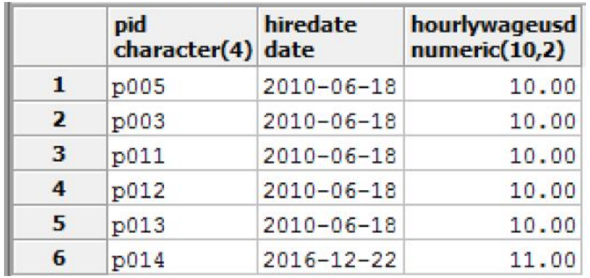


	pid character(4)	hiredate date	promotiondate date	hourlywageusd numeric(10,2)
1	p001	2016-02-03	2017-02-03	20.00
2	p007	2015-10-15	2016-12-31	25.00
3	p015	2013-04-19	2014-06-13	27.00
4	p016	2012-09-01	2014-12-01	25.00
5	p017	2015-03-15	2017-02-01	30.00

Crew Table

The crew table contains the person ID, hourly wage in U.S. dollars, original hire date, and hourly wage for each crew member. A person cannot be added to the crew table unless he or she already exists in the staff table. The person must be a crew member for the same store as in the staff table. The default hourly wage is $10.

```
DROP TABLE IF EXISTS Crew;
CREATE TABLE Crew (
     PID char(4) not null references Staff(PID),
     SID char(4)  not null references Staff(SID),
     HireDate date,
     HourlyWageUSD numeric(10,2) default 10.00,
     primary key(PID)
);
```



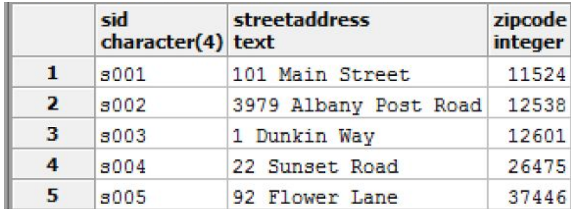
	pid character(4)	hiredate date	hourlywageusd numeric(10,2)
1	p005	2010-06-18	10.00
2	p003	2010-06-18	10.00
3	p011	2010-06-18	10.00
4	p012	2010-06-18	10.00
5	p013	2010-06-18	10.00
6	p014	2016-12-22	11.00

Functional Dependencies:

PID → HireDate, HourlyWageUSD

Stores Table

The stores table contains the ID, street address, and zipcode for each store. A zipcode cannot be given to a store unless it already exists in the zipcode table.



	sid character(4)	streetaddress text	zipcode integer
1	s001	101 Main Street	11524
2	s002	3979 Albany Post Road	12538
3	s003	1 Dunkin Way	12601
4	s004	22 Sunset Road	26475
5	s005	92 Flower Lane	37446

```
DROP TABLE IF EXISTS Stores;
CREATE TABLE Stores (
     SID char(4) not null,
     StreetAddress text,
     Zipcode int not null references Zipcode(Zipcode),
     primary key(SID)
);
```

```
Functional Dependencies:
     SID → StreetAddress, Zipcode
```

StoreOfferings Table

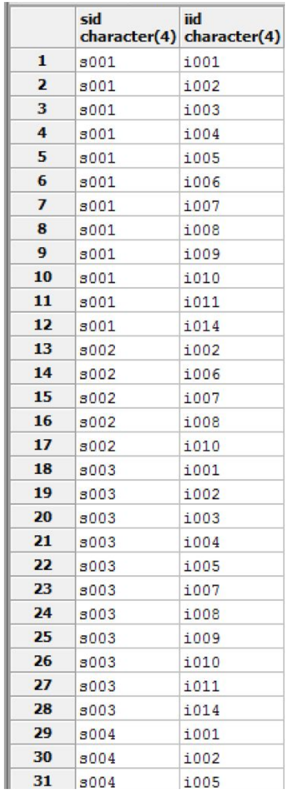
The store offerings table contains which items are offered at each store. A store ID cannot be listed unless it is already in the stores table. An item ID cannot be listed unless it is already in the items table.

```
DROP TABLE IF EXISTS StoreOfferings;
CREATE TABLE StoreOfferings (
     SID char(4)  not null references Stores(SID),
     IID char(4)  not null references Items(IID),
     primary key(SID, IID)
);
```

Functional Dependencies:

SID, IID →

A portion of the sample data:



	sid character(4)	iid character(4)
1	s001	i001
2	s001	i002
3	s001	i003
4	s001	i004
5	s001	i005
6	s001	i006
7	s001	i007
8	s001	i008
9	s001	i009
10	s001	i010
11	s001	i011
12	s001	i014
13	s002	i002
14	s002	i006
15	s002	i007
16	s002	i008
17	s002	i010
18	s003	i001
19	s003	i002
20	s003	i003
21	s003	i004
22	s003	i005
23	s003	i007
24	s003	i008
25	s003	i009
26	s003	i010
27	s003	i011
28	s003	i014
29	s004	i001
30	s004	i002
31	s004	i005

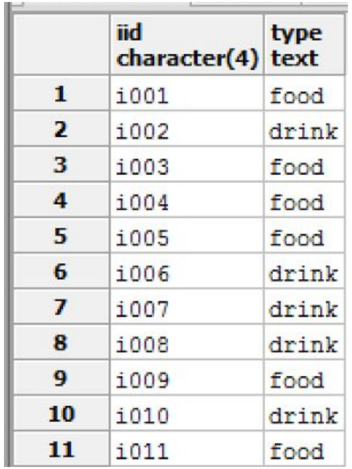
Items Table

The items table contains the id and type of item for any food or drink sold at any Dunkin location.

```
DROP TABLE IF EXISTS Items;
CREATE TABLE Items (
    IID char(4) not null,
    Type text,
    primary key(IID),
    CONSTRAINT CHK_Type CHECK
    (Type='food' OR Type='drink')
);
```

Functional Dependency:

IID → Type



	iid character(4)	type text
1	i001	food
2	i002	drink
3	i003	food
4	i004	food
5	i005	food
6	i006	drink
7	i007	drink
8	i008	drink
9	i009	food
10	i010	drink
11	i011	food

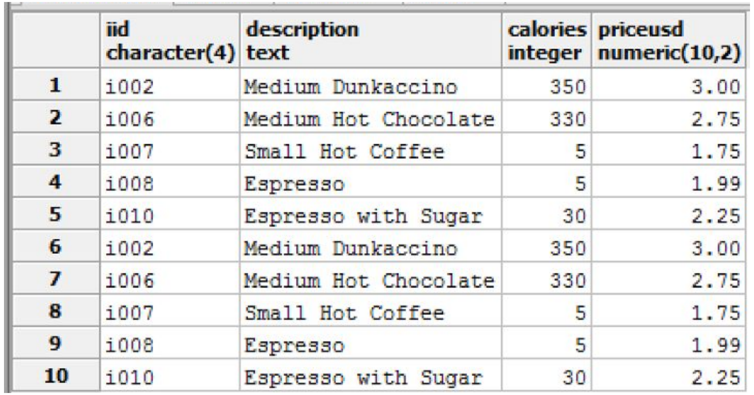
Drinks Table

The drinks table contains each drink’s ID, description, calorie count, and price in U.S. dollars. An item cannot be added to the drinks table unless it already exists as a drink item in the items table.

```
DROP TABLE IF EXISTS Drinks;
CREATE TABLE Drinks (
     IID char(4) not null references items(IID),
     Description text,
     Calories integer,
     PriceUSD numeric(10,2)
);
```

Functional Dependencies:

     IID → Description, Calories, PriceUSD



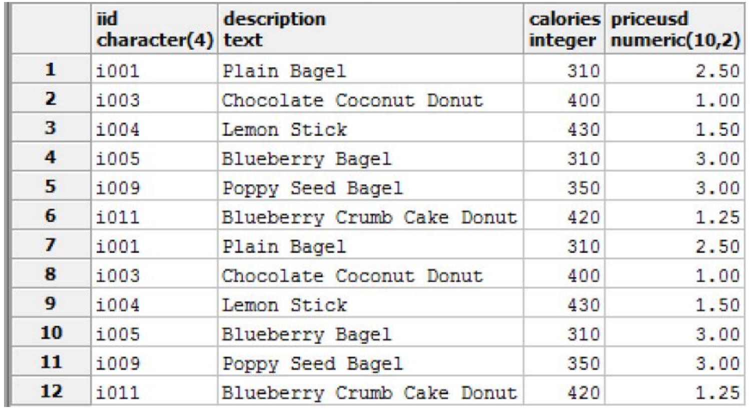
	iid	description	calories	priceusd
	character(4)	text	integer	numeric(10,2)
1	i002	Medium Dunkaccino	350	3.00
2	i006	Medium Hot Chocolate	330	2.75
3	i007	Small Hot Coffee	5	1.75
4	i008	Espresso	5	1.99
5	i010	Espresso with Sugar	30	2.25
6	i002	Medium Dunkaccino	350	3.00
7	i006	Medium Hot Chocolate	330	2.75
8	i007	Small Hot Coffee	5	1.75
9	i008	Espresso	5	1.99
10	i010	Espresso with Sugar	30	2.25

Food Table

The food table contains each food item’s ID, description, calorie count, and price in U.S. dollars. An item cannot be added to the food table unless it already exists as a food item in the items table.

```
DROP TABLE IF EXISTS Food;
CREATE TABLE Food(
     IID char(4) not null references items(IID),
     Description text,
     Calories integer,
     PriceUSD numeric(10,2)
);
```

Functional Dependencies:
IID → Description, Calories, PriceUSD

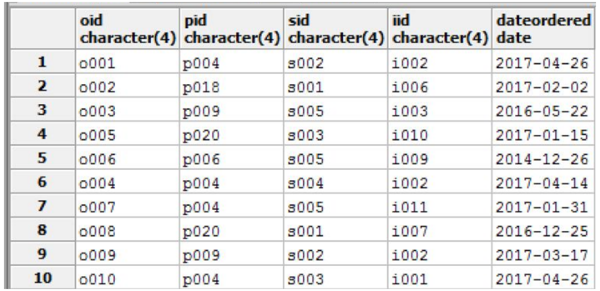


	iid character(4)	description text	calories integer	priceusd numeric(10,2)
1	i001	Plain Bagel	310	2.50
2	i003	Chocolate Coconut Donut	400	1.00
3	i004	Lemon Stick	430	1.50
4	i005	Blueberry Bagel	310	3.00
5	i009	Poppy Seed Bagel	350	3.00
6	i011	Blueberry Crumb Cake Donut	420	1.25
7	i001	Plain Bagel	310	2.50
8	i003	Chocolate Coconut Donut	400	1.00
9	i004	Lemon Stick	430	1.50
10	i005	Blueberry Bagel	310	3.00
11	i009	Poppy Seed Bagel	350	3.00
12	i011	Blueberry Crumb Cake Donut	420	1.25

Orders Table

The orders table lists the order id, customer who ordered, item that was ordered, store at which the item was ordered, and the date of the order. An item cannot be in the orders table unless it is already in the items table. A customer cannot be in the orders table unless he or she is already in the customers table. An store cannot be in the orders table unless it is already in the stores table.

```
DROP TABLE IF EXISTS Orders;
CREATE TABLE Orders (
     OID char(4) not null,
     PID char(4) not null references Customers(PID),
     SID char(4),
     IID char(4),
     DateOrdered date,
     totalUSD numeric(10,2),
     foreign key(SID, IID) references StoreOfferings(SID, IID),
     primary key(OID)
);
```



	oid character(4)	pid character(4)	sid character(4)	iid character(4)	dateordered date
1	o001	p004	s002	i002	2017-04-26
2	o002	p018	s001	i006	2017-02-02
3	o003	p009	s005	i003	2016-05-22
4	o005	p020	s003	i010	2017-01-15
5	o006	p006	s005	i009	2014-12-26
6	o004	p004	s004	i002	2017-04-14
7	o007	p004	s005	i011	2017-01-31
8	o008	p020	s001	i007	2016-12-25
9	o009	p009	s002	i002	2017-03-17
10	o010	p004	s003	i001	2017-04-26

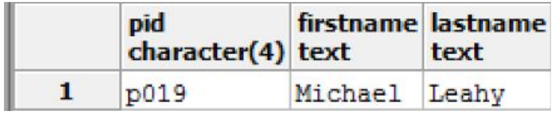
Functional Dependencies:

OID → PID, SID, IID, DateOrdered

inactiveCustomers view

Gets the id, first name, and last name of any customer who has not placed an order

```
create  or replace view inactiveCustomers
     as select distinct p.pid, p.firstname, p.lastname
     from customers c, orders o, people p
     where c.pid not in
          (select pid from orders)
           and c.pid = p.pid
     order by p.pid ASC;

Select * from inactiveCustomers;
```

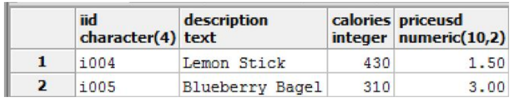


	pid character(4)	firstname text	lastname text
1	p019	Michael	Leahy

unorderedFood view

Retrieves information about each food that has never been ordered

```
create or replace view unorderedFood
as select * from food f
where f.iid in (
select distinct i.iid
     from items i
     where i.iid not in
     (select iid from orders))
order by f.iid ASC;

select * from unorderedFood;
```

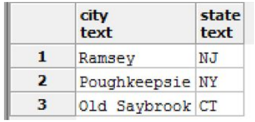


	iid	description	calories	priceusd
	character(4)	text	integer	numeric(10,2)
1	i004	Lemon Stick	430	1.50
2	i005	Blueberry Bagel	310	3.00

View: *perksLocations*

A view designed to get the city and states of customers who are perks members. This is to analyze the locations where the new perks membership is being used.

```
create or replace view perksLocations
as
     select z.city, z.state
     from zipcode z, customers c, people p
     where z.zipcode = p.zipcode
     and c.pid = p.pid and c.perksmember = ‘Yes’
     group by z.city, z.state;

Select * from perksLocations;
```



	city text	state text
1	Ramsey	NJ
2	Poughkeepsie	NY
3	Old Saybrook	CT

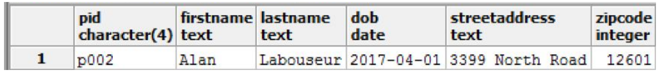
Stored Procedure: *searchCustomerName*

This procedure allows users to search for people based on an element of their first name, last name, or both. This is also easily adaptable to be able to search only staff, customers, managers, crew, or banned customers instead of every person.

```
CREATE OR REPLACE FUNCTION searchCustomerName(TEXT, TEXT, REFCURSOR) RETURNS refcursor AS
$$
        DECLARE
                searchFirst TEXT := $1;
                searchLast TEXT := $2;
                resultSet REFCURSOR := $3;
BEGIN
        OPEN resultset FOR
                 SELECT *
                 FROM people
                 WHERE firstname LIKE searchFirst
                 AND lastname LIKE searchLast;
        return resultSet;
end;
$$
LANGUAGE plpgsql;
```

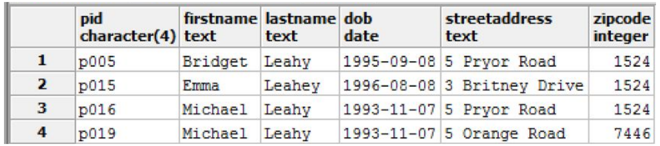
searchCustomerName examples

```
SELECT searchCustomerName('A%', 'L%', 'ref');
FETCH ALL FROM ref;
```



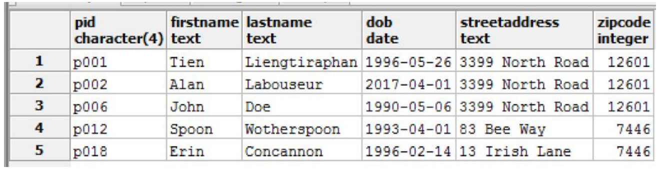
	pid character(4)	firstname text	lastname text	dob date	streetaddress text	zipcode integer
1	p002	Alan	Labouseur	2017-04-01	3399 North Road	12601

```
SELECT searchCustomerName('%', 'Leah%', 'ref1');
FETCH ALL FROM ref1;
```



	pid character(4)	firstname text	lastname text	dob date	streetaddress text	zipcode integer
1	p005	Bridget	Leahy	1995-09-08	5 Pryor Road	1524
2	p015	Emma	Leahey	1996-08-08	3 Britney Drive	1524
3	p016	Michael	Leahy	1993-11-07	5 Pryor Road	1524
4	p019	Michael	Leahy	1993-11-07	5 Orange Road	7446

```
SELECT searchCustomerName('%n', '%', 'ref2');
FETCH ALL FROM ref2;
```



	pid character(4)	firstname text	lastname text	dob date	streetaddress text	zipcode integer
1	p001	Tien	Liengtiraphan	1996-05-26	3399 North Road	12601
2	p002	Alan	Labouseur	2017-04-01	3399 North Road	12601
3	p006	John	Doe	1990-05-06	3399 North Road	12601
4	p012	Spoon	Wotherspoon	1993-04-01	83 Bee Way	7446
5	p018	Erin	Concannon	1996-02-14	13 Irish Lane	7446

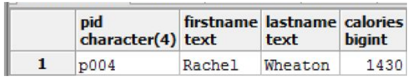
Stored Procedure: *getCalories*

This allows for users to search for a section of a customer’s first, last, or both names. The result of the search includes not only the customer’s full name, but his or her ID and total calories consumed from every order.

```
CREATE OR REPLACE FUNCTION getCalories(TEXT, TEXT, REFCURSOR) RETURNS refcursor AS
$$
        DECLARE
                searchFirst TEXT := $1;
                searchLast TEXT := $2;
                resultSet REFCURSOR := $3;
BEGIN
        OPEN resultset FOR
 select p.pid, p.firstname, p.lastname, sum(f.calories) + sum(d.calories) as calories
from orders o left outer join drinks d on o.iid = d.iid
                left outer join food f on o.iid = f.iid
                left outer join customers c on o.pid = c.pid
                left outer join people p on o.pid = p.pid
where o.pid=c.pid and
 p.firstname LIKE searchFirst
 AND p.lastname LIKE searchLast
 group by p.pid, p.firstname, p.lastname;
        return resultSet;
end;
$$
LANGUAGE plpgsql;
```

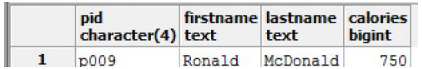
Testing *getCalories*

```
SELECT getCalories('R%', 'W%', 'ref3');
FETCH ALL FROM ref3;
```



	pid character(4)	firstname text	lastname text	calories bigint
1	p004	Rachel	Wheaton	1430

```
SELECT getCalories('%%', 'M%', 'ref4');
FETCH ALL FROM ref4;
```



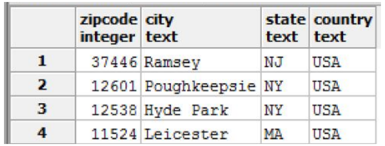
	pid character(4)	firstname text	lastname text	calories bigint
1	p009	Ronald	McDonald	750

Stored Procedure: Store Location Information

This procedure takes input of a city name and finds all store location information using LIKE.

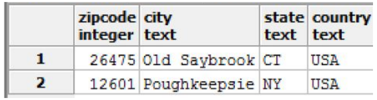
```
CREATE OR REPLACE FUNCTION storeLocation(TEXT, REFCURSOR) RETURNS refcursor AS
$$
      DECLARE
            searchZip TEXT := $1;
            resultSet REFCURSOR := $2;
BEGIN
      OPEN resultset FOR
 select * from zipcode z

where z.city like searchZip
and z.zipcode in (select zipcode from stores);
      return resultSet;
end;
$$
LANGUAGE plpgsql;
```

```
SELECT storeLocation('%e%','ref1');
FETCH ALL FROM ref1;
```



	zipcode	city	state	country
	integer	text	text	text
1	37446	Ramsey	NJ	USA
2	12601	Poughkeepsie	NY	USA
3	12538	Hyde Park	NY	USA
4	11524	Leicester	MA	USA

```
SELECT storeLocation('%o%','ref1');
FETCH ALL FROM ref1;
```



	zipcode	city	state	country
	integer	text	text	text
1	26475	Old Saybrook	CT	USA
2	12601	Poughkeepsie	NY	USA

Trigger: *checkFood*

This trigger ensures that a drink is not added to the food table.
If an item is listed as a drink in the item table and information regarding the drink is incorrectly added to the food table, the row containing that item’s ID is deleted from the food table and added to the drink table

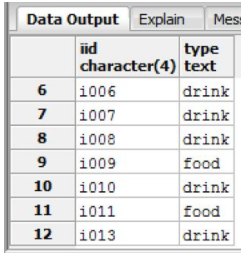
```
CREATE OR REPLACE FUNCTION checkFood()
RETURNS TRIGGER AS
$$
BEGIN
   IF (select i.type from items i where i.iid=NEW.IID ) = 'drink'

    THEN
  delete from food where iid = NEW.IID;
  insert into drinks(IID, description, calories, priceUSD) values (NEW.IID, NEW.Description, NEW.CALORIES, NEW.PriceUSD);
   END IF;
   RETURN NEW;
END;
$$
language plpgsql;

CREATE TRIGGER checkFood
AFTER INSERT ON Food
FOR EACH ROW
EXECUTE PROCEDURE checkFood();
```

Testing *checkFood*

Add a drink to the item table, then try to insert more information on it into the food table

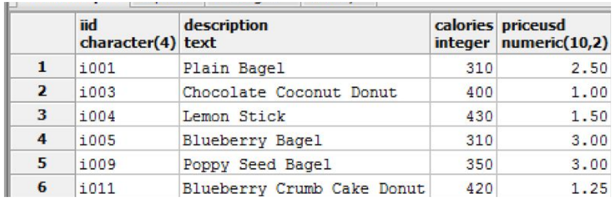
```
insert into items(IID, Type) values ('i013', 'drink');

insert into food(IID, description, calories, priceUSD) values ('i013', 'Testing', 310,
3);
```

items:



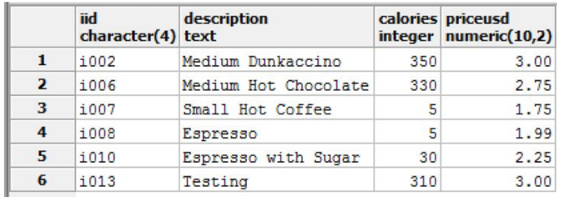
	iid character(4)	type text
6	i006	drink
7	i007	drink
8	i008	drink
9	i009	food
10	i010	drink
11	i011	food
12	i013	drink

food:



	iid character(4)	description text	calories integer	priceusd numeric(10,2)
1	i001	Plain Bagel	310	2.50
2	i003	Chocolate Coconut Donut	400	1.00
3	i004	Lemon Stick	430	1.50
4	i005	Blueberry Bagel	310	3.00
5	i009	Poppy Seed Bagel	350	3.00
6	i011	Blueberry Crumb Cake Donut	420	1.25

drinks:



	iid character(4)	description text	calories integer	priceusd numeric(10,2)
1	i002	Medium Dunkaccino	350	3.00
2	i006	Medium Hot Chocolate	330	2.75
3	i007	Small Hot Coffee	5	1.75
4	i008	Espresso	5	1.99
5	i010	Espresso with Sugar	30	2.25
6	i013	Testing	310	3.00

Item 13 is classified as a drink, so it is removed from the food table and inserted into the drinks table.

Trigger: *checkDrink*

This trigger ensures that a food is not added to the drink table.
If an item is listed as a food in the item table and information regarding the food is incorrectly added to the drink table, the row containing that item’s ID is deleted from the drink table and added to the food table

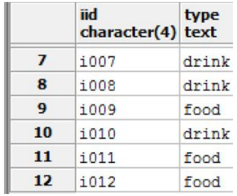
```
CREATE OR REPLACE FUNCTION checkDrink()
RETURNS TRIGGER AS
$$
BEGIN
   IF (select i.type from items i where i.iid=NEW.IID ) = 'food'

    THEN
  delete from drinks where iid = NEW.IID;
  insert into food(IID, description, calories, priceUSD) values (NEW.IID, NEW.Description, NEW.CALORIES, NEW.PriceUSD);
   END IF;
   RETURN NEW;
END;
$$
language plpgsql;

CREATE TRIGGER checkDrink
AFTER INSERT ON Drinks
FOR EACH ROW
EXECUTE PROCEDURE checkDrink();
```

Testing *checkDrink*

Insert a new item (‘i012’) into the items table as a food:

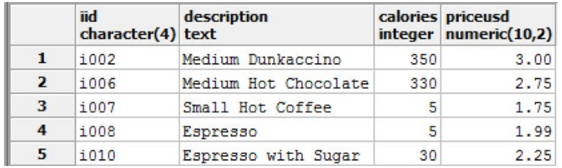
```
insert into items(IID, Type) values ('i012', 'food');

insert into drinks(IID, description, calories, priceUSD) values ('i012', 'Testing food', 352, 2.29);
```

Items:



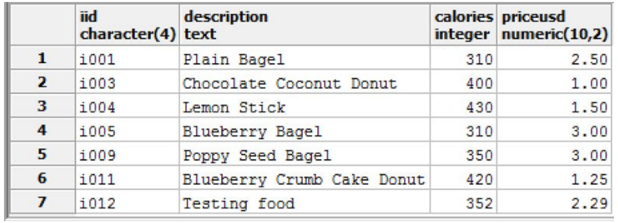
	iid character(4)	type text
7	i007	drink
8	i008	drink
9	i009	food
10	i010	drink
11	i011	food
12	i012	food

drinks:



	iid character(4)	description text	calories integer	priceusd numeric(10,2)
1	i002	Medium Dunkaccino	350	3.00
2	i006	Medium Hot Chocolate	330	2.75
3	i007	Small Hot Coffee	5	1.75
4	i008	Espresso	5	1.99
5	i010	Espresso with Sugar	30	2.25

food:



	iid character(4)	description text	calories integer	priceusd numeric(10,2)
1	i001	Plain Bagel	310	2.50
2	i003	Chocolate Coconut Donut	400	1.00
3	i004	Lemon Stick	430	1.50
4	i005	Blueberry Bagel	310	3.00
5	i009	Poppy Seed Bagel	350	3.00
6	i011	Blueberry Crumb Cake Donut	420	1.25
7	i012	Testing food	352	2.29

Item 12 is classified as a food, so it is removed from the drinks table and inserted into the food table.

Trigger: *priceCeiling*

Dunkin has enacted a new policy in which food items sold must remain under $5 to attract customers. If a food item is added that costs $5 or more, it is immediately deleted from the food and items tables.

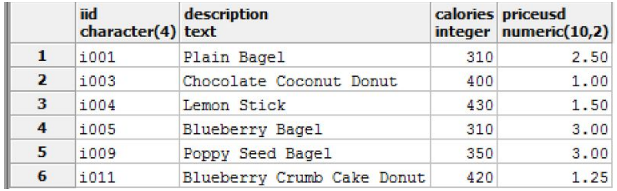
```
CREATE OR REPLACE FUNCTION foodCeiling()
RETURNS TRIGGER AS
$$
BEGIN
   IF NEW.priceUSD >=5 THEN
  delete from food where priceUSD = NEW.priceUSD;
  delete from items where iid = NEW.iid;
   END IF;
   RETURN NEW;
END;
$$
language plpgsql;

CREATE TRIGGER foodCeiling
AFTER INSERT ON Food
FOR EACH ROW
EXECUTE PROCEDURE foodCeiling();
```

Testing *priceCeiling*

Try to insert an item that is too expensive to check that it gets removed:

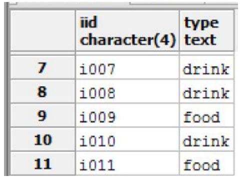
```
insert into items(IID, Type) values ('i014', 'food');

insert into food(IID, description, calories, priceUSD) values ('i014', 'Too
Expensive', 310, 6);
```

```
select * from food;
```



	iid character(4)	description text	calories integer	priceusd numeric(10,2)
1	i001	Plain Bagel	310	2.50
2	i003	Chocolate Coconut Donut	400	1.00
3	i004	Lemon Stick	430	1.50
4	i005	Blueberry Bagel	310	3.00
5	i009	Poppy Seed Bagel	350	3.00
6	i011	Blueberry Crumb Cake Donut	420	1.25

```
Select * from items;
```

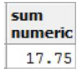


	iid character(4)	type text
7	i007	drink
8	i008	drink
9	i009	food
10	i010	drink
11	i011	food

Reports on Sales in 2017

Total money collected in 2017:

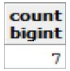
```
    select sum(totalUSD)
    from orders
    where dateordered >= '2017-01-01';
```



sum numeric
17.75

Total number of orders in 2017:

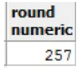
```
    select count(oid) from orders where dateordered >= '2017-01-01';
```



count bigint
7

Average calories from every item:

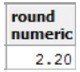
```
    Select round((avg(d.calories) + avg(f.calories))/2) from drinks d, food f;
```



round numeric
257

Average price from every item:

```
    Select round((round(avg(d.priceUSD), 2) + round(avg(f.priceUSD), 2))/2, 2)
    from drinks d, food f;
```



round numeric
2.20

User Roles

There are three user roles: Admin, CEO, and Managers

```
create role admin;
create role CEO;
create role managers;
```

ADMIN: Admin has administrative power over the entirety of the Dunkin database.

```
grant all on all tables in schema public to admin;
```

MANAGERS: Have complete power over the crew. They cannot delete people, customers, or banned customers. They can only select orders, items, food, drinks, and store offerings.

```
grant SELECT, INSERT, UPDATE, DELETE on crew to managers;
grant SELECT, INSERT, UPDATE, DELETE on staff to managers;
grant SELECT, INSERT, UPDATE on people to managers;
grant SELECT, INSERT, UPDATE on bannedCustomers to managers;
grant SELECT, INSERT, UPDATE on customers to managers;
grant SELECT on orders to managers;
grant SELECT on items to managers;
grant SELECT on food to managers;
grant SELECT on drinks to managers;
grant SELECT on storeofferings to managers;
```

CEO: Has ability to make any select, insert, update, or view the the majority of tables. However cannot delete customers nor banned customers.

```
grant SELECT, INSERT, UPDATE, DELETE on managers to CEO;
grant SELECT, INSERT, UPDATE, DELETE on crew to CEO;
grant SELECT, INSERT, UPDATE, DELETE on staff to CEO;
grant SELECT, INSERT, UPDATE, DELETE on people to CEO;
grant SELECT, INSERT, UPDATE on bannedCustomers to CEO;
grant SELECT, INSERT, UPDATE on customers to CEO;
grant SELECT, INSERT, UPDATE, DELETE on orders to CEO;
grant SELECT, INSERT, UPDATE, DELETE on items to CEO;
grant SELECT, INSERT, UPDATE, DELETE on food to CEO;
grant SELECT, INSERT, UPDATE, DELETE on drinks to CEO;
grant SELECT, INSERT, UPDATE, DELETE on storeOfferings to CEO;
grant SELECT, INSERT, UPDATE, DELETE on stores to CEO;
grant SELECT, INSERT, UPDATE, DELETE on zipcode to CEO;
```

Chaos breaks loose and the CEO tries to sabotage the company. Immediately the admin will immediately:

```
revoke all on all tables in schema public from CEO;
```

Known Problems/Future Enhancements

- The way in which items are stored could be improved. Rather than the preset way for items to be inserted and ordered, in the future there will be a more “cookbook” style design, in which items can be completely customized. There will be drink subtype tables for types of drink flavors, dairy options, sweetener options, drink size, etc.
- Currently an order only consists of one item. In the future, the order table will only consist of the order ID, store ID, person ID, and date. There will be an additional table added called OrderDetails, in which multiple items can be added to each order while maintaining 3NF.
- When the user roles and privileges are added to to the main .sql file containing create statements, inserts, reports, triggers, views, and stored procedures, it cannot correctly be run in its entirety. Parts of the script get discarded. Therefore, there are two separate .sql files.