

# RESTAURANT

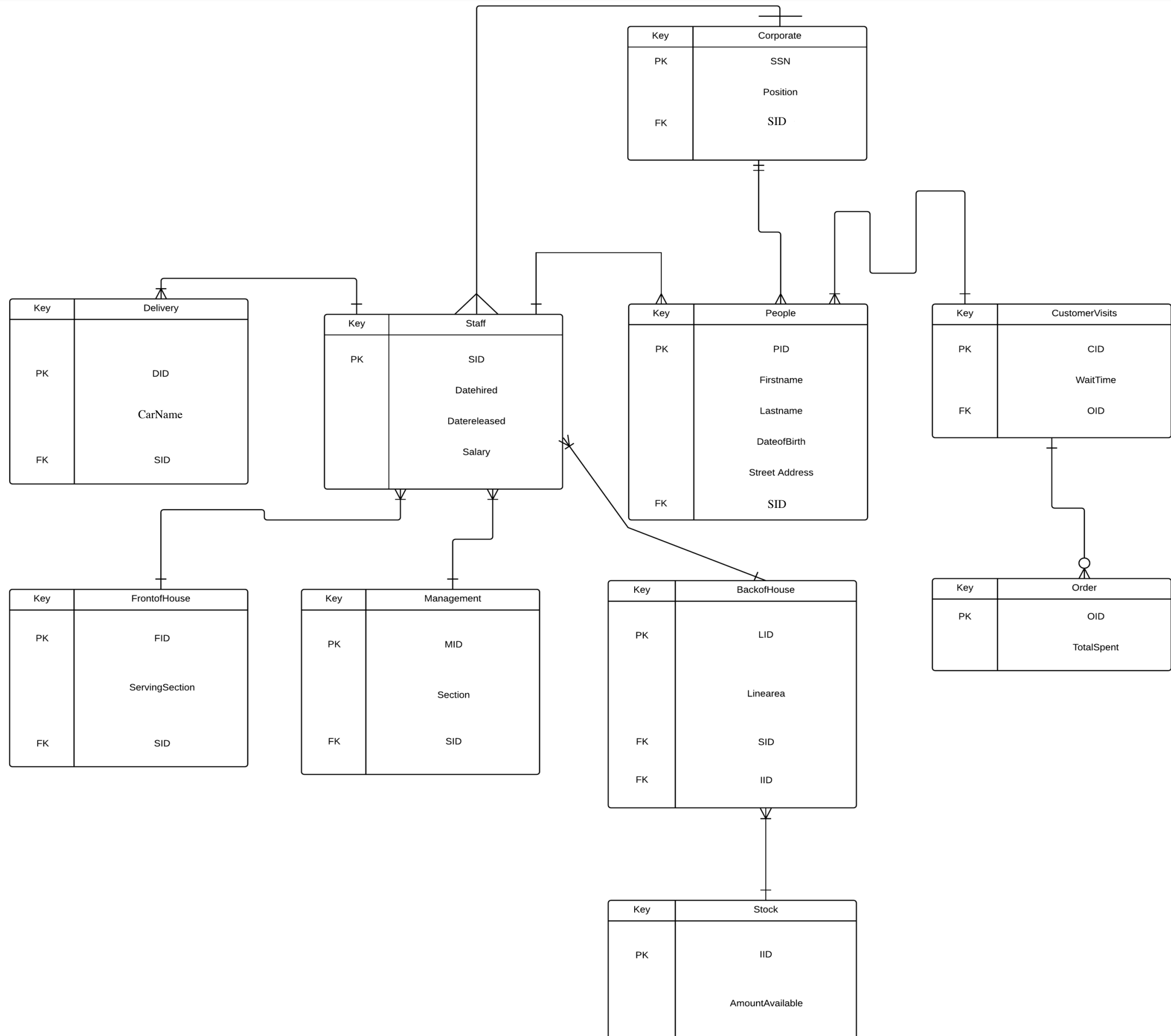
**Database Design  
Proposal  
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# Table of Contents

Executive Summary.....	3
Entity Relationship Diagram.....	4
Tables	
Corporate.....	5
Staff .....	7
People.....	9
CustomerVisits.....	11
Delivery.....	13
FrontofHouse.....	15
BackofHouse.....	16
Management.....	17
Order.....	18
Views.....	19/20
Reports.....	21/22
Stored Procedures.....	23/24
Triggers.....	25/26
Security.....	27
Notes.....	28
Problems.....	29
Enhancements.....	30

# Executive Summary

This document outlines the structure and entities involved in the design and implementation of owning a restaurant. The database organizes the restaurant into categories, which simplifies and assists employee's on what tasks need to be completed. Corporate will be able to see all new hires, both in the front and the back of the restaurant, as well as all their information, tasks, and the new employee's position.



# Table

## Corporate

### Purpose:

This table is created to store corporate positions along with the salary.

```
CREATE TABLE corporate (  
    SSN int NOT NULL,  
    DateHired date,  
    DateReleased date,  
    SID int NOT NULL,  
    PRIMARY KEY(SSN),  
    FOREIGN KEY(SID) references staff(SID)  
);
```

### Functional Dependencies

SSN -> DateHired, DateReleased, SID

# Corporate Sample Data

	SSN integer	DateHired Timestamp without time zone	DateReleased Timestamp without time zone	SID integer
1	480466669	2013-01-12		1
2	501145494	2014-11-30		2
3	544900941	2014-12-08		3
4	449825815	2015-01-13		4
5	530719531	2015-10-03		5
6	127849320	2015-10-15		6
7	121309512	2015-11-03		7
8	901238410	2016-02-19		8

# Table

## Staff

### Purpose:

This table is created to keep track of when employees are hired or let go.

```
CREATE TABLE staff (  
    SID int NOT NULL,  
    DateHired date,  
    DateReleased date,  
    Salary int NOT NULL,  
    PRIMARY KEY(SID)  
);
```

### Functional Dependencies

SID -> DateHired, DateReleased, Salary

# Staff Sample Data

	<b>SID integer</b>	<b>DateHired Timestamp without time zone</b>	<b>DateReleased Timestamp without time zone</b>	<b>Salary integer</b>
<b>1</b>	1	2013-01-12		195000
<b>2</b>	2	2014-11-30		127000
<b>3</b>	3	2014-12-08		101000
<b>4</b>	4	2015-01-13		94000
<b>5</b>	5	2015-10-03		142000
<b>6</b>	6	2015-10-15		42000
<b>7</b>	7	2015-11-03		57000
<b>8</b>	8	2016-02-19		30000



# Table

## People

### Purpose:

This table is created to list basic information about everyone who is employed at the company.

```
CREATE TABLE people (  
    PID int NOT NULL,  
    Firstname text,  
    Lastname text,  
    DateofBirth date,  
    StreetAddress text,  
    SID int NOT NULL,  
    PRIMARY KEY(PID),  
    FOREIGN KEY(SID) references staff(SID)  
);
```

### Functional Dependencies

PID -> Firstname, Lastname, DateofBirth, StreetAddress, SID

# People Sample Data

	<b>PID integer</b>	<b>Firstname text</b>	<b>Lastname text</b>	<b>DateofBirth date</b>	<b>StreetAddress text</b>	<b>SID integer</b>
<b>1</b>	1001	Charles	Hersheberg	1964-11-21	291 Hunting Street	1
<b>2</b>	1002	Nick	Barnett	1977-12-08	31 Main Street	2
<b>3</b>	1003	Joe	Shmoe	1968-10-21	38 Brooklyn Blvd	3
<b>4</b>	1004	Amanda	Mctigue	1979-03-05	932 Fulton Street	4
<b>5</b>	1005	Sherla	Jermain	1981-12-06	54 Fuller Court	5
<b>6</b>	1006	Jerald	Bronze	1985-05-16	83 Bear Oak Lane	6
<b>7</b>	1007	Mason	Shaw	1992-06-18	339 Rock Oak Road	7
<b>8</b>	1008	Kayla	Marhefka	1987-03-12	1 Hampton Street	8
<b>9</b>	1009	Brian	Monahan	1990-04-20	301 Eisenhower Lane	9
<b>10</b>	1010	Carla	Sofia	1997-02-01	194 Red Oak Road	10
<b>11</b>	1011	Vlad	Donavan	1981-01-02	35 Pin Oak Road	11
<b>12</b>	1012	Ryan	Neumann	1995-11-30	38 Scarlet Drive	12

# Table

## CustomerVisits

### Purpose:

This table was created to keep track of every customer, how long their estimated wait time is, as well as the order identification number.

```
CREATE TABLE customerVisits (  
    CID int NOT NULL,  
    WaitTime time NOT NULL,  
    OID int NOT NULL,  
    PRIMARY KEY(CID),  
    FOREIGN KEY(OID) references order(OID)  
);
```

### Functional Dependencies

CID -> WaitTime, OID

# CustomerVisits Sample Data

	CID integer	WaitTime time without timezone	OID integer
1	103213	11:15:32	101
2	103214	12:32:41	102
3	103215	12:47:51	103
4	103216	13:01:41	104
5	103217	13:16:18	105
6	103218	13:36:53	106
7	103219	14:09:10	107
8	103220	14:51:39	108

# Table

## Delivery

### Purpose:

This table keeps track of all outgoing orders and which car is delivering.

```
CREATE TABLE delivery (  
    DID int NOT NULL,  
    CarName text,  
    SID int NOT NULL,  
    PRIMARY KEY(CID),  
    FOREIGN KEY(SID) references staff(SID)  
);
```

### Functional Dependencies

DID -> CarName, SID

# Delivery Sample Data

	DID integer	CarName text	SID integer
1	1	Nissan	12
2	2	Chevy	8
3	3	Chevy	10
4	4	Chevy	12
5	5	Nissan	10
6	6	Nissan	9
7	7	Nissan	8
8	8	Chevy	10

# Table

## FrontofHouse

### Purpose:

This table is created for all waiters or waitresses, signaling which tables they will be serving and in what section.

```
CREATE TABLE frontofHouse (  
    FID int NOT NULL,  
    ServingSection int NOT NULL,  
    SID int NOT NULL,  
    PRIMARY KEY(FID),  
    FOREIGN KEY(SID) references staff(SID)  
);
```

### Functional Dependencies

FID -> ServingSection, SID

	FID integer	ServingSection integer	SID integer
1	1	10	5
2	2	12	6
3	3	15	7
4	4	6	8

# Table

## BackofHouse

### Purpose:

This table is created for everything that goes on behind the kitchen doors of restaurant(stock, chefs, and assembly).

```
CREATE TABLE backofHouse (  
    LID int NOT NULL,  
    LineArea text NOT NULL,  
    SID int NOT NULL,  
    IID int NOT NULL,  
    PRIMARY KEY(LID),  
    FOREIGN KEY(SID) references staff(SID),  
    FOREIGN KEY(IID) references stock(IID)  
);
```

### Functional Dependencies

LID -> LineArea, SID, IID

	LID integer	LineArea text	SID integer	IID integer
1	1	10	1	50
2	2	12	2	32
3	3	15	3	41
4	4	6	4	12



# Table

## Management

### Purpose:

This table was created to keep track of all managers at the location. The section will designate who is in charge of what, along with what administrative rights come with that section.

```
CREATE TABLE management (  
    MID int NOT NULL,  
    section text,  
    SID int NOT NULL,  
    PRIMARY KEY(MID),  
    FOREIGN KEY(SID) references staff(SID)  
);
```

	MID integer	Section text	SID integer
1	1	Management	1
2	2	Front of House	2
3	3	Back of House	3
4	4	Stock/Delivery	4

### Functional Dependencies

MID -> Section, SID

# Table

## Order

### Purpose:

This table was created to keep track of orders and order costs. When a customer places an order, it will take the OID provided, match it with the OID in the order table, and get the corresponding order total(TotalSpent).

```
CREATE TABLE order (  
    OID int NOT NULL,  
    TotalSpent float(6,2),  
    PRIMARY KEY(OID)  
);
```

	OID integer	TotalSpent float(6,2)
1	101	121.42
2	102	75.56
3	103	24.98
4	104	309.61

### Functional Dependencies

OID -> TotalSpent

# Views

## Order Total of the Current Customer

This view lists the complete current order, including wait time, along with the correct total for the customerID.

```
CREATE VIEW CurrentOrder AS  
  SELECT *  
  FROM customerVisits  
  INNER JOIN order  
  ON customerVisits.oid = order.oid  
  ORDER BY oid DESC;
```

# Views

## Salary of Corporate Positions

This view lists the complete current order, including wait time, along with the correct total for the customerID.

```
CREATE VIEW CorporateSalary AS
  SELECT staff.salary, staff.sid, corporate.sid
  FROM staff
  INNER JOIN corporate
  ON staff.sid = corporate.sid
  ORDER BY sid DESC;
```

# Reports

## Average Wait Time per Orders

**Purpose:** Understanding the average wait time per order is extremely important when running a restaurant. Any improvements made will be directly reflected in the wait time.

```
SELECT ROUND(avg(WaitTime), 2) AS Avg_Wait_Time_Per_Order  
FROM customerVisits;
```

# Reports

## Average Salary per Employee

**Purpose:** Salary is an extremely important statistic in a company, and an employee needs to be assured they will be paid properly. Over time, the average salary should increase, raising morale and confidence within the workplace.

```
SELECT ROUND(avg(staff.salary, 2) AS Avg_Salary_Per_Employee
FROM staff st,
      corporate co
WHERE co.sid = st.sid
ORDER BY Avg_Salary_Per_Employee DESC;
```

# Stored Procedures

## InsertNewOrder

**Purpose:** When an order is placed, a new entry is required in the database to get the cost and estimated wait time of an order.

**Query:**

```
CREATE OR REPLACE FUNCTION insertNewOrder()
```

```
Return trigger as
```

```
$$
```

```
    Begin
```

```
        IF NEW.cid IS NULL THEN
```

```
            RAISE EXCEPTION 'Invalid OrderID provided!'
```

```
        END IF;
```

```
        IF NEW.WaitTime IS NULL THEN
```

```
            RAISE EXCEPTION 'Can only update WaitTime if order exists'
```

```
        END IF;
```

```
        IF OLD.WaitTime IS NOT NULL THEN
```

```
            RAISE EXCEPTION 'The order has already been received!'
```

```
        END IF;
```

```
        INSERT INTO InsertNewOrder(cid, WaitTime)
```

```
            VALUES(NEW.cid, '30')
```

```
        RETURN NEW;
```

```
    End
```

```
$$ LANGUAGE plpgsql;
```

# Stored Procedures

## EmployeeReleased

**Purpose:** Whenever an employee is Fired/Let go, the staff table needs to be updated with the date they were released.

**Query:**

```
CREATE OR REPLACE FUNCTION employeeReleased()
RETURN trigger AS
$$
    BEGIN
        IF NEW.sid IS NULL THEN
            RAISE EXCEPTION 'Invalid StaffID provided!'
        END IF;
        IF NEW.DateReleased IS NULL THEN
            RAISE EXCEPTION 'Can only update DateReleased on Staff table'
        END IF;
        IF OLD.DateReleased IS NOT NULL THEN
            RAISE EXCEPTION 'Employee already released.'
        END IF;
        INSERT INTO employeeReleased (sid, DateReleased)
            VALUES(NEW.sid, Date)

        RETURN NEW;
    END;
$$ LANGUAGE plpgsql;
```



# Triggers

## newOrder

### Purpose:

When a new order is placed, that means the order table needs to be updated. It will be updated with the 'InsertNewOrder' procedure.

### Query:

```
CREATE TRIGGER newOrder  
AFTER UPDATE ON order  
FOR EACH ROW EXECUTE PROCEDURE insertNewOrder();
```

# Triggers

## releaseEmployee

### Purpose:

When a staff member is released, the staff table needs to be updated to add the correct DateReleased to the appropriate cell.

### Query:

```
CREATE TRIGGER releaseEmployee  
AFTER UPDATE ON staff  
FOR EACH ROW EXECUTE PROCEDURE employeeReleased();
```

# Security

## Customers:

Customers indirectly interact with the database whenever a new order is placed.

```
GRANT INSERT ON orders TO customerVisit;
```

## Management:

Management will need to update any table, so all access is granted to them.

```
GRANT ALL PRIVILEGES ON ALL TABLES IN SCHEMA public TO  
management;
```

# Implementation Notes

The following are suggestions and/or requirements for implementation:

- CustomerVisit table can be updated to include orderTotal. This would eliminate the order table, however, this is left at the moment in case of adjustments and/or additions.
- CustomerVisit could also include a delivery column, which would be a boolean, signaling whether the customer placed the order to eat in or take out.
- Stock table can be improved, however, as not many items have been added, it's usability will increase over time.
- FrontofHouse only has table sections that can be assigned. It would be ideal to number/name all tables, and assign a group to the server, which would easily allow adding/removing table(s) from the server's ServingSection.

# Known Problems

It is known that this database design possesses the following undesirable traits:

- At the moment, only the owner has full administrative rights. This may not be a flaw, however if additional management members need permission, this may present a problem.
- At the moment, the customer's total displays the full amount. However, if a customer would like to split a bill between two people, a problem may occur.
- Only one server is designated to a unique area, however, what if servers are designated to multiple sections or multiple tables? The database does not recognize this.

# Future Enhancement

Some features and functionalities that might be desirable in the future:

- Section the WaitTime from the CustomerVisit table into two sections: OrderStarted and OrderReceived.
- Allow server's to serve more than one section at a time.
- Combine Order and CustomerVisit into one table.
- Organize areas of Front and Back of the house to be more specific, which in turn would drastically improve the database as a whole.
- Implement an OrderCancelled section into the Orders table, in the case that the customer cancelled their order.