DB PROJECT

Title: <u>*Ravan's Culinary Odyssey*</u> ***Group:*** <u>The Best DB Ever</u>

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Due: *March 26th, 2024* *Thomas (Tuck) Williamson, Eric Wnorowski*

DB Phase 1

For our database, we chose to make it an encapsulation of a restaurant that we have called **Ravan's Culinary Odyssey**, a 3-star Michelin restaurant located in the heart of downtown Charleston.

For this system the database tracks staff members, and their specialization, who is working each shift, reservations, and tables available to reserve by date and time, menu items, orders, and tickets comprising the menu items each table orders for each course (though not limited to course).

To keep this pinnacle 3-star reputation **Ravan's Culinary Odyssey** has these business rules.

Business Rules

1. It must track staff members.
    I.   Staff members are identified by first name, last name, date when they started, phone number, position, and social security number to be employed.
    II. Each staff member has their own specialization of the following: manager, host, chef, waiter, and bartender.
    III. Some specializations have their own specialization.
        i.   Bartender specializations: bartender or barback.
        ii. Chef specializations: sous chef, pastry chef, roast chef, and executive chef.
        iii. Waiter specializations: Sommelier, Captain (responsible for several tables & their waiters), Waiter, Back waiter (helps waiters refill water, bread, etc.), Runner (brings cooked dishes to patrons), Busboy.
2. The system tracks staff on each shift. There are two 9 hour shifts every open day - lunch (9:30a-6:30p) and dinner (5:30p-2:30a) shifts with an hour overlap in the middle. The restaurant is open Tuesday – Sunday and closed on Mondays.
    I.   Each shift needs at least one of the following employee types (specialization does not matter):
        i.   Manager
        ii. Host
        iii. Chef
        iv. Bartender
        v.   Waiter
    II. The dinner shift also needs a Sommelier.
    III. Each shift may have any number of other positions.
3. The system must track reservations.
    I.   Reservations can be made between 10:30a-1a with a party name, size, date, and time, and may be flagged as VIP.
    II. The system tracks reservations by table at a given time for 2 hours on the hour (a simplification).

III. Each table has an identifier, capacity, and type (square, round, rectangular).
4. The system must track menu items.
   I. Each item has a name, type (appetizer, soup, salad, entrée, dessert, cocktail, wine, drink), description, if it has common allergens (ex: nuts), and price (which must end in .99).
   II. Some items may track quantities. All wines must track the number of bottles.
5. The system must track orders.
   I. Each order has the table that ordered, the reservation (if applicable), and the actual order.
   II. Each order has the has the item ordered, the waiter's identification, and what the shift that it was ordered during.

Phase 2

Phase 2-1.1 Entities

The following are entities tracked in the database:

1. STAFF

Attributes

- First Name [varchar]
- Last Name [varchar]
- Start Date [date]
- Phone Number [varchar]
- Social Security Number [varchar]

SPECIALIZATION EXTENSION OF STAFF

These are the specializations: manager, host, chef, waiter, and bartender. These specializations have their own specialization:

Bartender specializations: bartender or barback.

Chef specializations: sous chef, pastry chef, roast chef, and executive chef.

Waiter specializations: Sommelier, Captain (responsible for several tables & their waiters), Waiter, Back waiter (helps waiters refill water, bread, etc.), Runner (brings cooked dishes to patrons), Busboy

SHIFT

Attributes

- Date [date].
- Start Time – for any holidays/unusual circumstances [time, defaults = 09:30, 17:30].
- Duration – for any holidays/unusual circumstances [interval, default = 9 hours].
- ShiftID [Inc]

CUSTOMER

Attributes
- First Name [varchar]
- Last Name [varchar]
- Phone Number [varchar]
- VIP – denotes if this customer is important [Boolean, default = False]
- CustomerID [Inc]
- Comments – this is any notes for the staff [Allows NULL, varchar, default = NULL].

RESERVATION

Attributes
- Date [date]
- Time [time]
- Party size [Integer > 0]
- Occasion [Allows NULL, varchar, default = NULL].
- Comments [Allows NULL, varchar, default = NULL].
- Seated Time – the time when the Host seats this party [timestamp].

TOP

As 'table' is a reserved word for databases 'top' is used as a reference to restaurant slang for a table, though it is generally used to indicate the capacity (e.g. 4-top seats 4 guests, 2-top seats 2).

Attributes
- Identifier [varchar].
- Capacity [integer > 0].
- Type – one of Square, Round, Rectangle [Enum].

MENU ITEM

Attributes
- Title [varchar].
- Description [varchar].
- Type – one of appetizer, soup, salad, entrée, dessert, cocktail, wine, drink [Enum].
- Allergens – a list of any common allergens in this menu item [ARRAY Enum].
- Price – this must end in .99 [money].
- Quantity – [Allows NULL, integer, default = NULL].
- Active – a menu item may be temporarily (lack of ingredients) or permanently (seasonal, special item) marked as not being available [Boolean, default = True].

Attributes

- Quantity – Quantity of that order.
- OrderID [Inc]
- Time– When was this ordered

Phase 2-1.2 Relationships

The following relationships exist in the database. Below we use the following notation style **X** $- a:b$ **RELATION** $c:d$ **– Y** to denote a relation between entities X and Y. Participation counts 'a, b, c, d' are as typically noted $- a, b, c, d \in \mathbb{N} \cup \{N, M\}$[1]. The participation indicator closest to X, 'a' in the example is the minimum participation of entity 'X', 'b' is the maximum participation. The participation indicator 'c' is the minimum participation of entity 'Y', 'd' is the maximum participation of entity 'Y'.

STAFF & SHIFT

STAFF – 1:N MANAGES 1:N – SHIFT – A manager must be assigned to each Shift (but more than one may be assigned within the additional staff).

STAFF – 1:N HOSTS 1:N – SHIFT – A host must be assigned to each Shift (but more than one may be assigned within the additional staff).

STAFF – 1:N CHEFS 1:N – SHIFT – A chef must be assigned to each Shift (but more than one may be assigned within the additional staff).

STAFF – 1:N BARTENDS 1:N – SHIFT – A bartender must be assigned to each Shift (but more than one may be assigned within the additional staff).

STAFF – 1:N WAITERS1:N – SHIFT – A waiter must be assigned to each Shift (but more than one may be assigned within the additional staff).

STAFF – 1:N SOMMELIERS 0:N – SHIFT – A sommelier must be assigned to each dinner Shift (but more than one may be assigned within the additional staff). A lunch shift does not require a sommelier.

CUSTOMER & RESERVATION

CUSTOMER – 1:N RESERVES 1:1 – RESERVATION – a customer must exist but may have entered their information and not yet made a reservation or may only have historic reservations that have been archived. The reservation must refer to a customer.

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[1] The natural numbers, $\mathbb{N}$, include the positive integers $0 - \infty$.

Reservation & Top

Reservation – 1:1 Is For 0:N – Top – a reservation must be associated with a top(table). A top(table)

may not yet have any reservations for it.

Order & Top

Order – 1:1 From 0:N – Top – each order must have the top(table) it is to be delivered to. A top(table)

may not yet have any orders associated with it.

Order & Reservation

Order – 0:1 For 0:1 – Reservation – each order may be associated with a reservation. If there is a
reservation associated with the top(table) within the prior hour the system should default to this,
otherwise NULL.

Order & Waiter

Order – 1:1 Waited On By 0:N – Waiter During 1:1 - Shift– each order is started by a waiter during

some shift. A waiter may be new and not have taken any orders yet.

Order & Menu

Order – 0:N Comes From MENU – 1:1 – each order must have at least one menu item on it