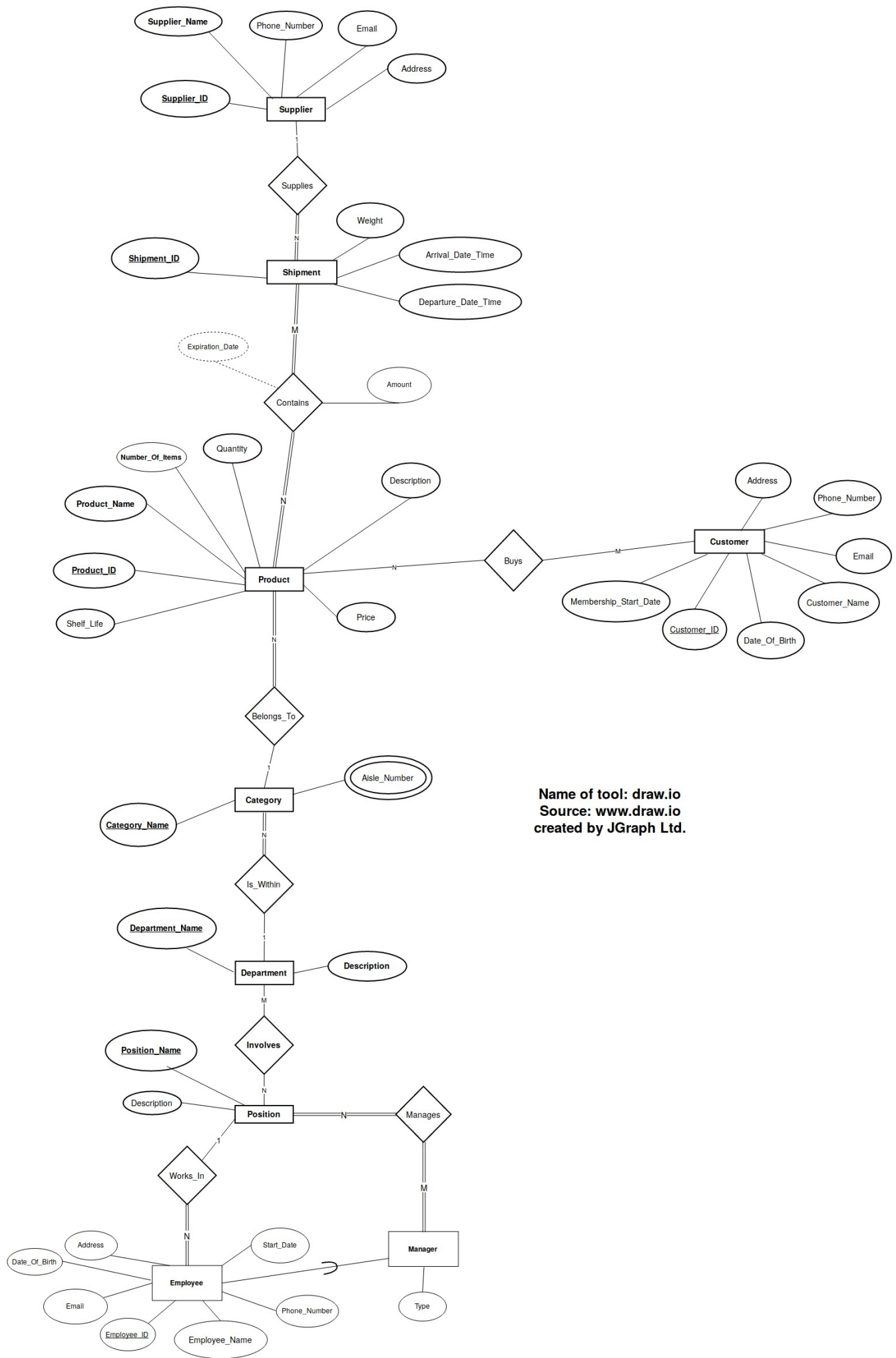


Final Design

ER Diagram



Name of tool: draw.io
 Source: www.draw.io
 created by JGraph Ltd.

ENTITY-RELATIONSHIP DICTIONARY

CLASSES

Class: Manager

Description: Employee that manages other employees within the store

Superclass: Employee

Attributes:

- Type, Varchar(16)

Attribute Descriptions:

- Type: the type of manager, either SHIFT, ASSISTANT, or GENERAL

ENTITIES

Entity: Category

Description: The types of products available in each department: Milk, Fruit, Beef, etc.

Primary Key: Category_Name

Attributes:

- Aisle_Number, Integer
- Category_Name, Varchar(32)

Attribute Descriptions:

- Aisle_Number: the aisle(s) associated with a particular category of food
- Category_Name: the name of the food category

Entity: Customer

Description: People who have a membership at the grocery store

Primary Key: Customer_ID

Attributes:

- Address, Varchar(128)
- Customer_ID, Integer
- Date_Of_Birth, DATE
- Email, Varchar(64)
- Membership_Start_Date, DATE
- Customer_Name, Varchar(64)
- Phone_Number, Char(10)

Attribute Descriptions:

- Address: address of the customer

- Customer_ID: unique identifier given to each customer
- Date_Of_Birth: customer's date of birth
- Email: email address of the customer
- Membership_Start_Date: the date when customer became a member
- Customer_Name: name of the customer
- Phone_Number: the customer's phone number

Entity: Department

Description: The sections which our products are divided into: Dairy, Produce, Meat, etc.

Primary Key: Department_Name

Attributes:

- Department_Name, Varchar(32)
- Description, Varchar(64)

Attribute Descriptions:

- Department_Name: the unique name of the department
- Description: the description of the department

Entity: Employee

Description: Person that works for the store

Primary Key: Employee_ID

Attributes:

- Address, Varchar(128)
- Date_Of_Birth, DATE
- Email, Varchar(64)
- Employee_ID, Integer
- Employee_Name, Varchar(32)
- Phone_Number, Char(10)
- Start_Date, DATE

Attribute Descriptions:

- Address: address of the employee
- Date_Of_Birth: employee's date of birth
- Email: email address of the employee
- Employee_ID: unique identifier given to each employee
- Employee_Name: name of the employee
- Phone_Number: the employee's phone number
- Start_Date: the starting date of employment

Entity: Position

Description: A type of job at the grocery store, which is either in a grocery department or in a storefront position.

Primary Key: Position_Name

Attributes:

- Description, Varchar(64)
- Position_Name, Varchar(32)

Attribute Descriptions:

- Description: a brief description of the position
- Position_Name: the unique name of the grocery store position

Entity: Product

Description: Any item sold in our store

Primary Key: Product_ID

Attributes:

- Description, Varchar(64)
- Product_ID, Integer
- Product_Name, Varchar(32)
- Price, Float
- Shelf_Life, Integer
- Quantity, Integer
- Number_Of_Items, Integer
- Total_Items, Integer

Attribute Descriptions:

- Description: a brief description of the product
- Product_ID: the unique ID given to each product
- Product_Name: the name of the product
- Price: the price of the product in USD
- Shelf_Life: the number of days it takes for a product to expire
- Quantity: how many units of the product the store currently has
- Number_Of_Items: number of individual items in product package
- Total_Items: the total number of individual items of a product; derived by the equation:
$$\text{Total_Items} = \text{Number_Of_Items} * \text{Quantity}$$

Entity: Shipment

Description: A collection of products delivered to the store from a supplier

Primary Key: Shipment_ID

Attributes:

- Arrival_Date_Time, DATE
- Departure_Date_Time, DATE

- Shipment_ID, Integer
- Weight, Float

Attribute Descriptions:

- Arrival_Date_Time: the date that the shipment was received by the store
- Departure_Date_Time: the date that the shipment was sent by the supplier
- Shipment_ID: a unique identifier for the shipment
- Weight: the weight of the shipment in pounds

Entity: Supplier

Description: A company that supplies the store with one or more products

Primary Key: Supplier_ID

Attributes:

- Address, Varchar(128)
- Email, Varchar(64)
- Supplier_Name, Varchar(32)
- Phone_Number, Char(10)
- Supplier_ID, Integer

Attribute Descriptions:

- Address: the business address of the supplier
- Email: the email address of the supplier
- Supplier_Name: the name of the supplier company
- Phone_Number: the supplier's business phone number
- Supplier_ID: a unique identifier for the supplier

RELATIONSHIPS

Relationship: Belongs_To

Entities: Product, Category

Cardinality: N:1

Description: Each product must belong to a single category. A category can have any number of products associated with it.

Relationship: Buys

Entities: Customer, Product

Cardinality: M:N

Description: A customer can buy any number of products. A product may be bought by multiple customers.

Relationship: Contains

Entities: Shipment, Product

Cardinality: M:N

Description: All shipments must contain one or more products. Each product must be delivered by one or more shipments.

Attributes:

- Amount, Integer
- Expiration_Date, DATE

Attribute Descriptions:

- Amount: the amount of a certain product that is contained in a shipment
- Expiration_Date: the date when a product expires; it is derived from the product's shelf life and the shipment's departure date

Relationship: Is_Within

Entities: Category, Department

Cardinality: N:1

Description: Each category must be within a single department. A department can have any number of categories.

Relationship: Involves

Entities: Department, Position

Cardinality: M:N

Description: Each position can be involved in one or more departments. Each department can involve one or more positions.

Relationship: Manages

Entities: Manager, Position

Cardinality: M:N

Description: Each manager must manage one or more positions. Each position must have one or more managers.

Relationship: Supplies

Entities: Supplier, Shipment

Cardinality: 1:N

Description: A supplier can supply one or more shipments. Each shipment must have one supplier.

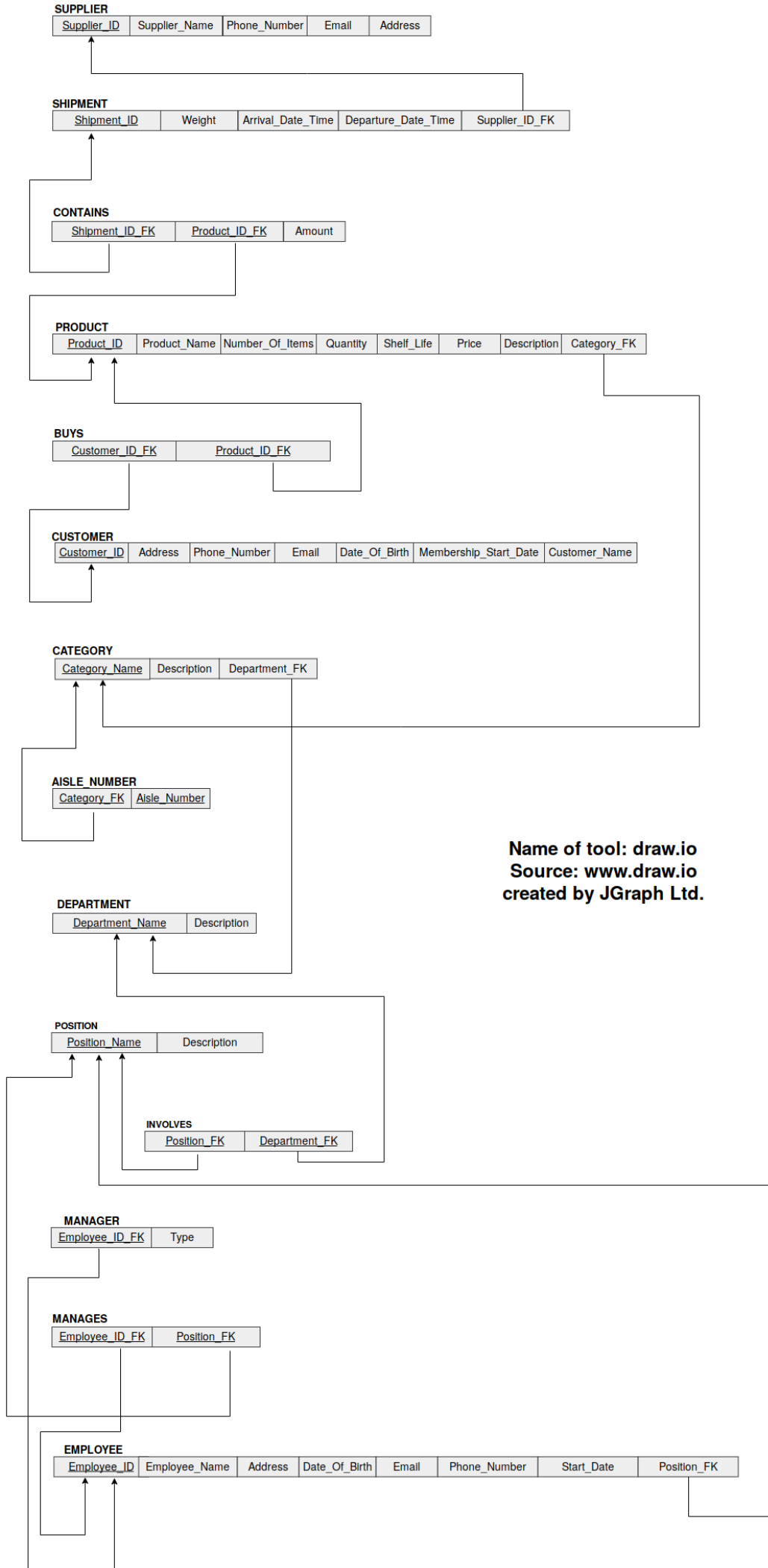
Relationship: Works_In

Entities: Employee, Position

Cardinality: N:1

Description: Each employee must work in a single position. A position can have any number of employees working in it.

Schema Diagram



Name of tool: draw.io
Source: www.draw.io
created by JGraph Ltd.

Schema Dictionary

Name: Aisle_Number

Description: Each category is located in one or more aisles.

Super Key: Category_FK + Aisle_Number

Foreign Key: Category_FK references Category(Category_Name)

Attributes:

- Aisle_Number, Integer
- Category_FK, Varchar(32)

Attribute Descriptions:

- Aisle_Number: the number of the aisle
- Category_FK: the name of the category associated with an aisle

Name: Buys

Description: A customer can buy any number of products. A product may be bought by multiple customers.

Primary Key: Customer_ID_FK + Product_ID_FK

Super Keys: Customer_ID_FK + Product_ID_FK

Foreign Keys:

- Customer_ID_FK references Customer(Customer_ID)
- Product_ID_FK references Product(Product_ID)

Attributes:

- Customer_ID_FK, Integer
- Product_ID_FK, Integer

Attribute Descriptions:

- Customer_ID_FK: the ID of the customer who buys the product
- Product_ID_FK: the ID of a product that is bought by the customer

Name: Category

Description: The types of products available in each department: Milk, Fruit, Beef, etc.

Primary Key: Category_Name

Foreign Key: Department_FK references Department(Department_Name)

Attributes:

- Category_Name, Varchar(32)
- Department_FK, Varchar(32);
- Description, Varchar(64):

Attribute Descriptions:

- Category_Name: the name of the food category
- Department_FK: the department that the category is within
- Description: a brief description of the category

Name: Contains

Description: All shipments must contain one or more products. Each product must be delivered by one or more shipments.

Primary Key: Shipment_ID_FK + Product_ID_FK

Super Keys: Shipment_ID_FK + Product_ID_FK

Foreign Keys:

- Product_ID_FK references Product(Product_ID)
- Shipment_ID_FK references Shipment(Shipment_ID)

Attributes:

- Amount, Integer
- Product_ID_FK, Integer
- Shipment_ID_FK, Integer

Attribute Descriptions:

- Amount: the quantity of a certain product that is contained in a shipment
- Product_ID_FK: the ID of a product contained in a shipment
- Shipment_ID_FK: the ID of a shipment

Name: Customer

Description: People who have a membership at the grocery store

Primary Key: Customer_ID

Attributes:

- Address, Varchar(128)
- Customer_ID, Integer
- Customer_Name, Varchar(64)
- Date_Of_Birth, DATE
- Email, Varchar(64)
- Membership_Start_Date, DATE
- Phone_Number, Char(10)

Attribute Descriptions:

- Address: address of the customer
- Customer_ID: unique identifier given to each customer
- Customer_Name: name of the customer
- Date_Of_Birth: customer's date of birth
- Email: email address of the customer

- Membership_Start_Date: the date when customer became a member
- Phone_Number: the customer's phone number

Name: Department

Description: The sections which our products are divided into: Dairy, Produce, Meat, etc.

Primary Key: Department_Name

Attributes:

- Department_Name, Varchar(32)
- Description, Varchar(64)

Attribute Descriptions:

- Department_Name: the unique name of each department
- Description: a brief description of the department

Name: Employee

Description: Person that works for the store

Primary Key: Employee_ID

Foreign Keys: Position_FK references Position(Position_Name)

Attributes:

- Address, Varchar(128)
- Date_Of_Birth, DATE
- Email, Varchar(64)
- Employee_ID, Integer
- Employee_Name, Varchar(32)
- Phone_Number, Char(10)
- Position_FK, Varchar(32)
- Start_Date, DATE

Attribute Descriptions:

- Address: address of the employee
- Date_Of_Birth: employee's date of birth
- Email: email address of the employee
- Employee_ID: unique identifier given to each employee
- Employee_Name: name of the employee
- Phone_Number: the employee's phone number
- Position_FK: the name of the grocery store position
- Start_Date: the starting date of employment

Name: Involves

Description: A position may involve one or more departments

Primary Key: Position_FK + Department_FK

Super Key: Position_FK + Department_FK

Foreign Keys:

- Department_FK references Department (Dept. Name)
- Position_FK references Position(Position_Name)

Attributes:

- Department_FK: Varchar(32)
- Position_FK: Varchar(32)

Attribute Descriptions:

- Department_FK: the name of a department
- Position_FK: the name of a position

Name: Manager

Description: Employee that manages other employees within the store

Primary Key: Employee_ID_FK

Foreign Key: Employee_ID_FK references Employee(Employee_ID)

Attributes:

- Employee_ID_FK, Integer
- Type, Varchar(16)

Attribute Descriptions:

- Employee_ID_FK: unique identifier given to each employee
- Type: the type of manager, either SHIFT, ASSISTANT, or GENERAL

Name: Manages

Description: Each manager must manage one or more positions. Each position must have one or more managers.

Primary Key: Employee_ID_FK + Position_FK

Super Keys: Employee_ID_FK + Position_FK

Foreign Keys:

- Employee_ID_FK references Employee(Employee_ID)
- Position_FK references Position(Position_Name)

Attributes:

- Employee_ID_FK, Integer
- Position_FK, Varchar(32)

Attribute Descriptions:

- Employee_ID_FK: a unique identifier given to each employee
- Position_FK: the name of a position

Name: Position

Description: A type of job in the grocery store

Primary Key: Position_Name

Attributes:

- Description, Varchar(64)
- Position_Name, Varchar(32)

Attribute Descriptions:

- Description: a job description of the position
- Position_Name: the name of the job in the store

Name: Product

Description: Any item sold in our store

Primary Key: Product_ID

Foreign Keys:

- Category_FK references Category(Category_Name)

Attributes:

- Category_FK, Varchar(32)
- Description, Varchar(64)
- Number_Of_Items, Integer
- Price, Float
- Product_ID, Integer
- Product_Name, Varchar(32)
- Quantity, Integer
- Shelf_Life, Integer

Attribute Descriptions:

- Category_FK: the name of the category the product belongs to
- Description: a brief description of the product
- Number_Of_Items: the number of individual items within a product's container
- Price: the price of the product in USD
- Product_ID: the unique ID of the product
- Product_Name: the name of the product
- Quantity: how many containers of the product the store currently has
- Shelf_Life: the number of days it takes for a product to expire

Name: Shipment

Description: A collection of products delivered to the store from a supplier

Primary Key: Shipment_ID

Foreign Key: Supplier_ID_FK references Supplier(Supplier_ID)

Attributes:

- Arrival_Date_Time, DATE
- Departure_Date_Time, DATE
- Shipment_ID, Integer
- Supplier_ID_FK, Integer
- Weight, Float

Attribute Descriptions:

- Arrival_Date_Time: the date that the shipment was received by the store
- Departure_Date_Time: the date that the shipment was sent by the supplier
- Shipment_ID: a unique identifier for the shipment
- Supplier_ID_FK: a unique identifier for the supplier
- Weight: the weight of the shipment in pounds

Name: Supplier

Description: A company that supplies the store with one or more products

Primary Key: Supplier_ID

Attributes:

- Address, Varchar(128)
- Email, Varchar(64)
- Phone_Number, Char(10)
- Supplier_ID, Integer
- Supplier_Name, Varchar(32)

Attribute Descriptions:

- Address: the business address of the supplier
- Email: the email address of the supplier
- Phone_Number: the supplier's business phone number
- Supplier_ID: a unique identifier for the supplier
- Supplier_Name: the name of the supplier company