

Store Cluster
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Database Requirements - pg 1
ER Diagram - pg 3
Relational Schema - pg 4
Normalized Schema - pg 5
Integrity Constraints - pg 6
SQL Output Printout - A1

2. Database Requirements

This database will model a cluster of small grocery stores with many items inside of an aisle, and many aisle inside of a store. These stores will be related or unrelated to each other through a supplier which supplies items to the store.

Each store must have employees, and the employees may either stock aisles or manage another employee. For the sake of simplification, the database will not model every detail about a store (janitors, cashiers, owners, etc.) but will only model the parts of a store that is generally related to the items the store provides.

Entities

Employee

An Employee must contain an employee identification that will distinguish them from other employees in the system. An Employee will also have several characteristics, which will be their name, address, hours of work and have listed a few phone numbers. An employee is managed by another employee. Some employees are managers, and some employees stock aisles.

EmployeePhone

An employee may have multiple phone numbers, whether they be a cell phone, a home phone, or some other place that the store may reach them.

Item

An Item is required to have a barcode and is made up of a brand, price, and name of the particular item. There are many items that must be supplied from a supplier and many items of varying quantity may make up an aisle.

Store

Each store has a unique identification number and an unique location that the store operates in. Each store is owned by a single Owner, a store must also have many aisles, and must receive one or more shipments.

Supplier

Each supplier has a unique name with its own phone number and address. A supplier may supply many times and may or may not run shipments to other stores and may or may not carry a specific item in their inventory

Owner

The owner, will have a name, ID, and an address. The name and ID is the individual who owns the store in question and the address is where the owner lives. Each owner is in charge of exactly one store.

2b. Requirements continued

Aisle (weak)

An aisle is defined by the store it is in and its row Number. There can be many aisles in a store and an aisle can only have one store. The database is to keep track of the store's location of each aisle. An aisle must contain many items.

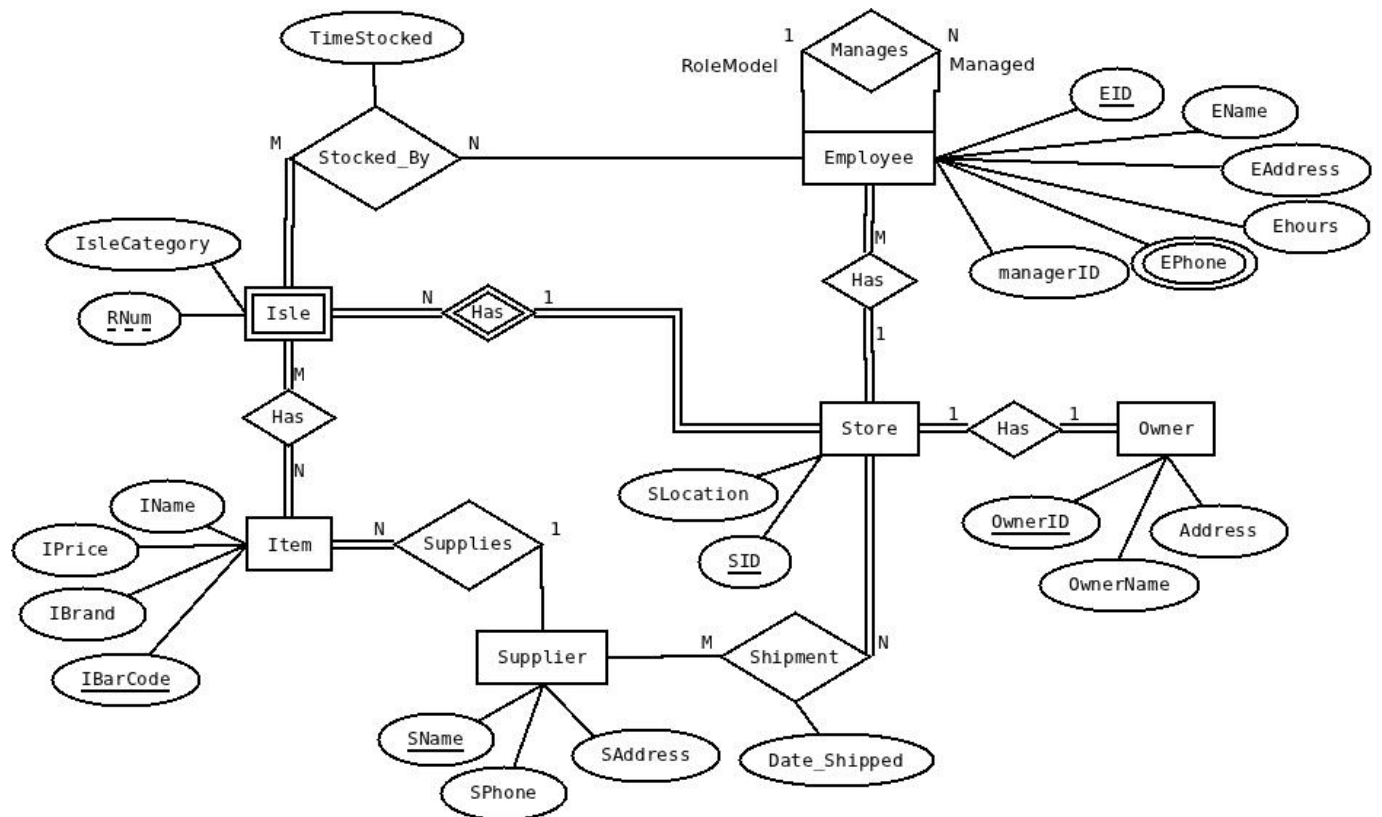
ItemsPerAisle

Each item in a store has its own unique barcode, and is placed in a particular row number inside a particular store.

StockedBy

for every aisle of a particular store there is an employee who stocks one or more aisle within a particular store and gives the last time the aisle was stocked.

3. ER diagram



4. Relational Schema

Employee(EID, name, address, Ehours, ManagerID, SID)

Item(IBarCode, Ibrand, Iprice, IName, Sname)

Store(Sid, Slocation, OwnerID)

Aisle(Rnum,SID, AisleCategory,TimeStocked)

Shipment(Sname,SID, dateShipped)

Supplier(Sname, Sphone, Saddress)

ItemsPerAisle(IBarCode, RNum, SID)

StockedBy(EID, RNum, SID)

EmployeePhone(EID, EPhone)

Owner(OwnerID, OName, OAddress)

5. Normalized Schema

Employee(EID, name, address, Ehours, ManagerID, SID)

Item(IBarCode, Ibrand, Iprice, IName, Sname)

Store(Sid, Slocation, OwnerID)

Aisle(Rnum, SID, AisleCategory, TimeStocked)

Shipment(Sname, SID, dateShipped)

Supplier(Sname, Sphone, Saddress)

ItemsPerAisle(IBarCode, RNum, SID)

StockedBy(EID, RNum, SID)

EmployeePhone(EID, EPhone)

Owner(OwnerID, OName, OAddress)

6. Integrity Constraints

IC name & table(s)	IC type	English Statement	Page # where implemented	Page # where tested
stockedByic1	Key	A row is stocked by an employee of a store	A3	A26
Store ic1	Foreign Key	A store has an owner	A2	A26
Item ic1	1-attribute	An item's price is greater than zero	A2	A26
Employee ic4	2-attribute, 1-row	A manager must work at the same store as an employee	A4	A27