

Store Database

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2. Database requirements: Two to three pages of text that describe precisely and concisely the database requirements. In order to improve readability, structure your description as follows:

This database will model a cluster of small grocery stores with many items inside of an isle, and many isles 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 isles 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 isles.

Item

An Item is required to have a bar code and is made up of a brand, price, name, and quantities 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 isle.

Stores

A Store must have many isles, and must have one supplier. Each store has a unique identification number and a location that the store operates in.

Supplier

Each store must have one supplier and each supplier must have one store. A supplier may supply many items. Each supplier has a unique name, and the database is to keep track of the phone number, and address.

Owner

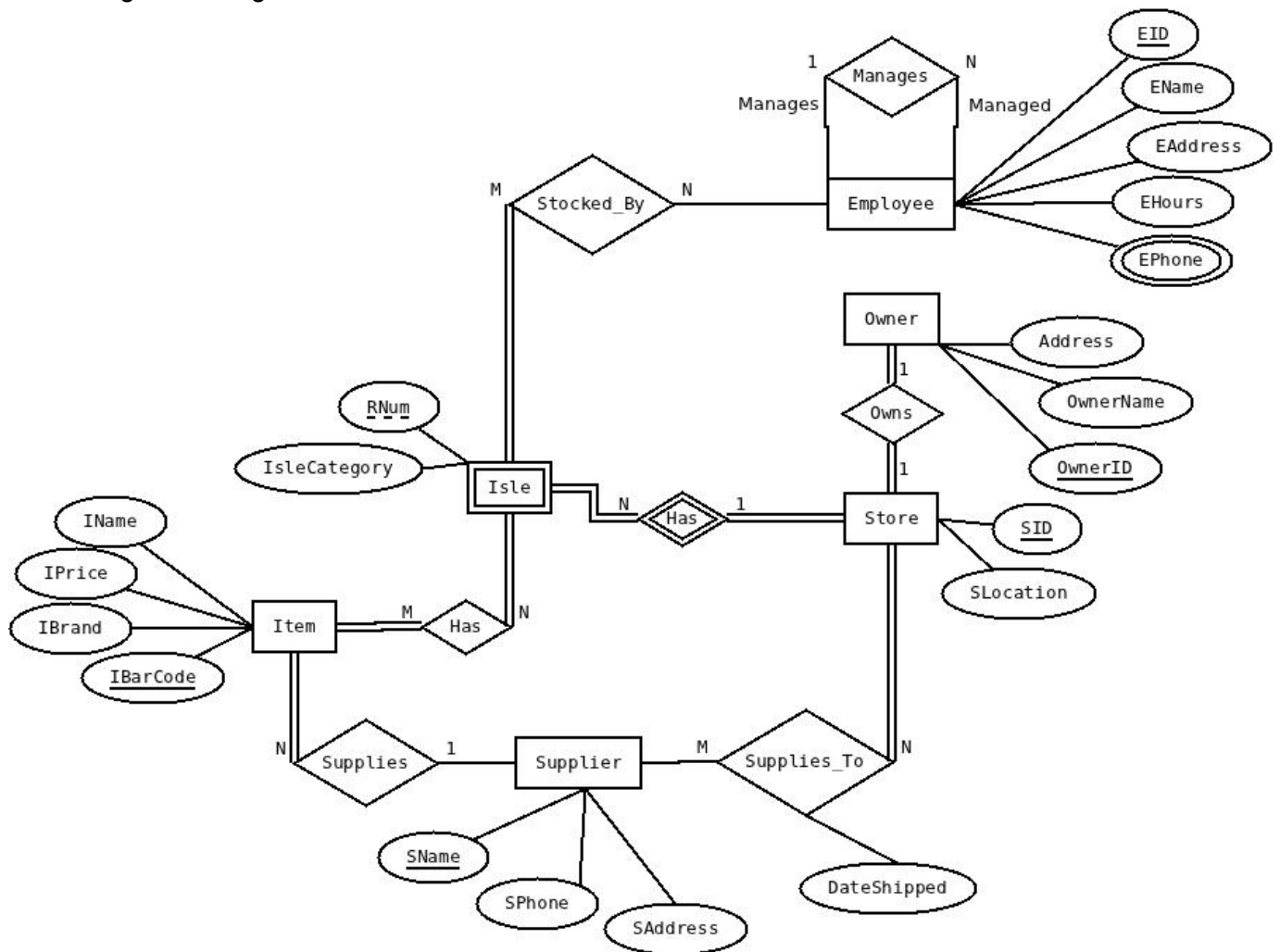
The owner, will have a name, ID, and an address. The name and ID is the individual who owns the store in question and the address is where the

owner lives.

Isle (weak)

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

3. ER diagram: Using the notation that we have used in class



4. Rudimentary relational schema: Just as we did in class where each relation that results from converting your ER schema is represented by one line of the form R (A, B, C, D).

Employee(EID, Ename, Eaddress, Ehours, ManagerID)
Item(IBarCode, Ibrand, Iprice, IName, Iquantity, Sname)

Store(Sid, Slocation, OwnerID)
 Isle(Rnum,SID, IsleCategory)
 Shipment(Sname,SID, dateShipped)
 Supplier(Sname, Sphone, Saddress, SID)
 ItemsPerIsles(IBarCode, RNum, SID)
 Stocked_By(EID, RNum, SID, TimeStocked)
 EmployeePhone(EID, EPhone)
 Owner(OwnerID, OName, OAddress)

5. Integrity constraints: State, in English the ICs in your application. Don't repeat any constraints that are stated in the ER diagram (e.g. key, participation, and cardinality constraints).

IC name & table	IC Type	English Statement
Employee IC1	Foreign Key	ManagerID is a foreign key referencing EID -- every employee has a manager.
Employee IC2	2-attribute 1 row CHECK	ManagerID can not be the same as EID -- a manager can not manage himself.
Employee IC3	1-attribute CHECK	Hours can not be less than 0
EmployeePhone IC1	Foreign Key	EID is a foreign key referencing Employee.EID
EmployeePhone IC1	Foreign Key	EID is a foreign key referencing Employee.EID
Item ICSupplier	Foreign Key	Every item has a supplier
Item IC1	1-attribute CHECK	an items price can not be less than or equal to 0
Item IC2	1-attribute CHECK	an items bar code must have a length greater than 0
Item IC3	Foreign Key	SName is a foreign key referencing Supplier.SName
Shipment IC1	Foreign Key	Sname is a foreign key referencing Supplier.Sname
Shipment IC2	Foreign Key	SID is a foreign key referencing Store.SID
Supplier IC1	Foreign Key	SID is a foreign key referencing Store.SID
Stocked_By IC1	1-attribute CHECK	Time stocked is more than 0 hours and less than 24 hours
Stocked_BY IC2	Foreign Key	RNum is a foreign key referencing Isle.RNum
Stocked_By IC3	Foreign Key	EID is a foreign key referencing Employee.EID

Stocked_By IC4	Foreign Key	SID is a foreign key referencing Store.SID
ItemPerIsle IC1	Foreign Key	SID is a foreign key referencing Store.SID
ItemPerIsle IC2	Foreign Key	IBarCodes is a foreign key referencing Item ItemBarCode
ItemPerIsle IC3	Foreign Key	Rnum is a foreign key referencing Isle RNum
Isle IC1	Foreign Key	SID is a foreign key referencing Store SID

Where IC type is one of: Foreign key, 1-attribute CHECK, and 2-attribute 1-row CHECK