

Inventory Management System for Food Service Distribution

CIS 353 01 - Database
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Database Requirements

This document outlines the requirements for a database to model an inventory management system for a foodservice distributor. The following database keeps track of warehouse stock at various locations. These locations can carry an inventory, which is made up of many products. The products are supplied by a separate company to the warehouse and information is recorded about each of the two entities, including sales history for each item. Orders will be processed by the warehouse and will be placed by purchasing coordinators who represent the businesses they are associated with. The purchasing coordinator's contact information and their corresponding store's details will be recorded. The details about the orders they make such as weight, notes for delivery, and the date it was placed will also be recorded within this database. Overall, the database is fundamentally designed to represent the necessities for basic warehouse operations, order tracking, and supplier/buyer information. The products are sold by the supplier to the warehouse, where the products will be stored within the various inventories. The products can be placed in orders "portion" by a coordinator that is buying products from the warehouse. Information is being tracked between all these interactions.

Warehouse

The warehouse entity represents a physical location where our products are stored. The products being stored are recorded through an inventory entity, which maintains information about the individual products, the specific warehouse, and the quantity stored at that warehouse. A warehouse receives an order to be fulfilled which is ultimately handled by the warehouse staff and passed along to the delivery/dispatch department which operates independently. A warehouse has only one manager, and their contact information is linked to the warehouse in case anything happens.

Product

In addition to being a physical item, a product also acts as a link between its supplier, our orders, and our inventory. Each product is assigned an ID that is used to uniquely identify it. Typical things such as description, name, and weight will be related to a product. The product is referenced by its unique ID in other tables.

Supplier

Since we are a foodservice distributor, our business has many contacts with suppliers whose products are distributed by us. The supplier entity keeps track of information about the supplier's location, the name of each company, and their unique IDs. The supplier's ID is associated with each product they provide so that we can easily keep track of which companies are providing which products. We must also acknowledge monitor when a product has multiple sellers.

Purchasing Coordinator

The purchasing coordinator entity places orders of products for location(s). This person may handle one location, or multiple, depending on the business type. This design allows one person to order for many store locations. The coordinator only needs to specify what items need to be in the order, not the warehouse the order needs to be placed by.

Order

Each order is placed by the purchasing coordinator and processed by the warehouse. The order would contain the date the order is processed. A single order may contain one or more products as the "portion" of the inventory and the store that would receive the order. Additional notes may be included in the order for the individual/business.

Store

Every store will have at least one purchasing coordinator who handles orders for the store. This essentially gives the purchasing coordinator permission to place orders and provide us a method for keeping track of who is making the orders and from what location.

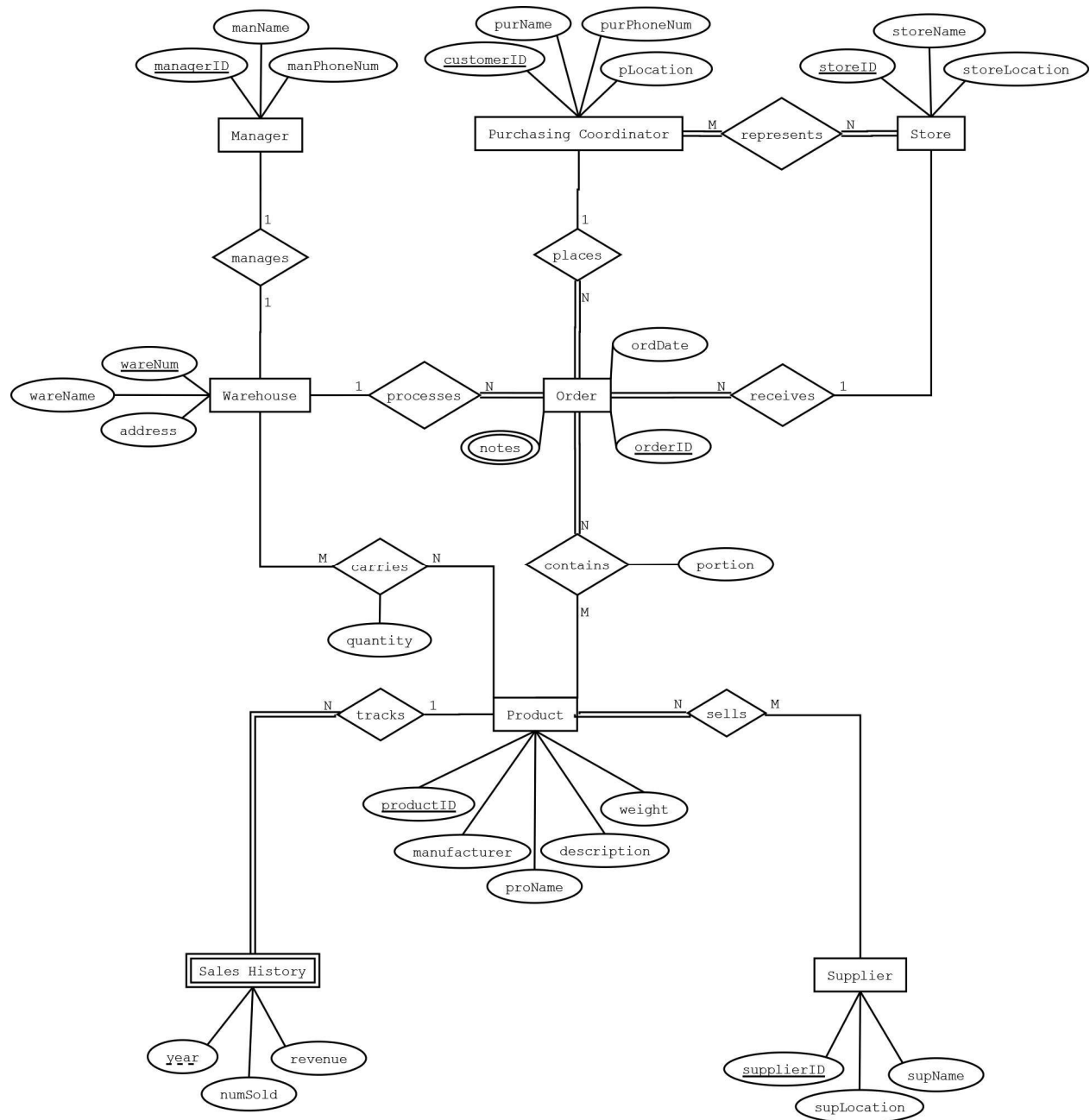
Sales History

Every product has a yearly sales history to track how much of a given product has been sold, and the revenue gained from that year of sales. This would be useful for determining what products a warehouse is making the most money on, and how much revenue per unit the warehouse makes.

Manager

Every warehouse has only one manager that controls the warehouse. The manager has an ID number, a name, and a phone number that is logged into the database. This can be associated with a specific warehouse number to determine who is a manager at what location. Since there are currently three warehouses that are present, there should only be three managers in total.

ER Diagram



Basic Relational Schema

Manager(managerID, manName, manPhoneNum)

Warehouse(wareNum, wareName, address)

Purchasing_Coordinator(customerID, purName, phoneNum, pLocation, storeID)

Store(storeID, storeName, storeLocation, customerID)

Order(orderID, o_date, notes, wareNum, customerID, storeID)

Product(productID, manufacturer, proName, description, weight, supplierID, orderID)

Supplier(supplierID, supLocation, supName)

Sales_History(productID, year, numSold, revenue)

Sells(supplierID, productID)

Represents(customerID, storeID)

Notes(orderID, date, note)

Carries(wareNum, productID, quantity)

Contains(orderID, productID, portion)

Integrity Constraints

IC name IC & table(s)	IC type	English statement	Page # where implemented	Page # where tested
wIC1 in Warehouse Table	Key	WareNum is the key for each warehouse.	A1	A4
s_hIC1 in Sales_History	Foreign Key	ProductID is a foreign key for Sales_History.	A3	A11
prIC1 in Product	1-attribute	Checks to make sure the weight is greater than 0.	A2	A11
s_hIC2 in Sales_History	2-attribute 1-row	Checks the number of units sold, and revenue are greater than 0.	A3	A11