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 food service 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 coordinators contact information, as well as the stores details, and details about the order such as weight, notes for delivery, and the date is was places 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 kept tracked through an *inventory* entity, which records the individual products, a specific warehouse, and the quantity stored at said 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 incase 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 which is used to uniquely identify it as well as typical things like a description, name, and weight. The product is referenced by its unique ID in other tables.

Supplier

Since we are a goods and service distributor, our business has many contacts with suppliers whose product is distributed by us. The supplier entity keeps track of information such as: each supplier's location, the name of each company, and their unique IDs. The suppliers ID is associated with each product they provide so that we can easily keep track of which companies are providing which products, as well as if 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, and not from what 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 on 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 order as well as allows us to keep track of who is ordering for whom.

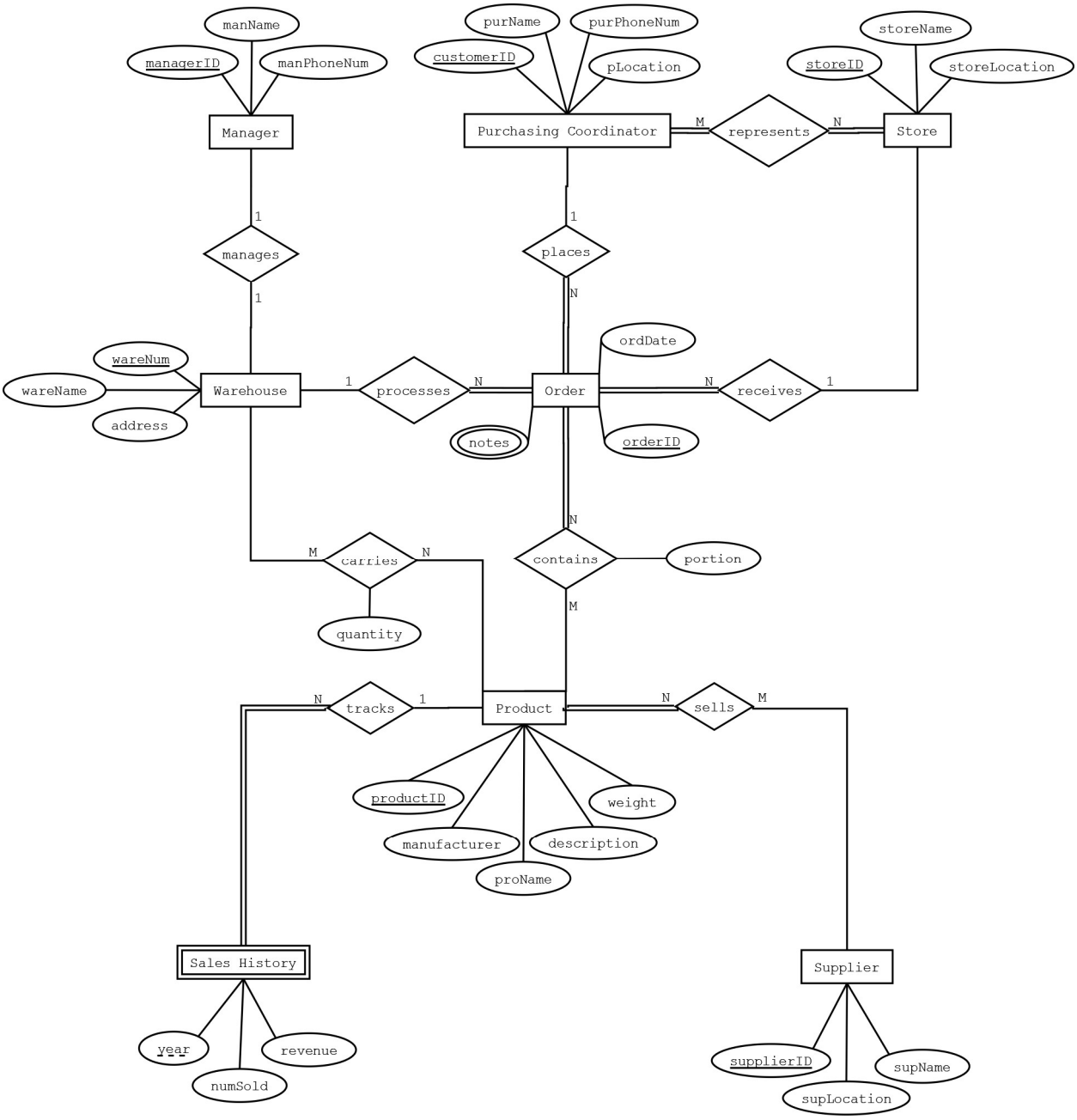
Sales History

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 in order 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


manName
managerID
manPhoneNum
Manager
purName
purPhoneNum
customerID
pLocation
Purchasing Coordinator
represents
storeName
storeID
storeLocation
Store
manages
places
wareNum
wareName
address
Warehouse
processes
Order
ordDate
receives
notes
orderID
carries
contains
portion
quantity
tracks
Product
sells
productID
weight
manufacturer
description
proName
Sales History
year
revenue
numSold
Supplier
supplierID
supName
supLocation

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_Histroy	Foreign Key	ProductID is a foreign key for Sales_Histroy.	A3	A11
proIC1 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