



Business goals to achieve:

1. To enable customers to check the availability of certain products in some stores.
2. To collect and organize customers' reviews to improve commodity and service quality.
3. To specify strategies for management to develop the business and obtain more profits.
4. To calculate the transaction amount and profit in certain period or in certain location.
5. To support sell and return products and apply appropriate discounts to vip members.
6. To distribute the proper types and quantities of products to each store or warehouse.

Decisions for database design:

Entities in the ERD include commodity, feedback, discount, membership, order, order line, vendor, warehouse, store, supply, allocation, employee, and department. Here are some brief descriptions for these entities that could help to explain our ideas of designation:

- The shop sells numbers of different kinds of commodities. The identifier for a commodity is commodity ID. The other attributes are commodity name, selling price and purchase price. An order line contains exactly one kind of commodities, and one kind of commodities could serve for any number of order line. Similarly, a supply contains exactly one kind of commodities, and one kind of commodities could serve for any number of supplies; an allocation contains exactly one kind of commodities, and one kind of commodities serve for any number of allocations.
- Members submit orders for commodities. The identifier of an order is order ID, and another attribute is date and total amount. A member might submit any number of orders, and each order is submitted by exactly one member. The identifier for a member is member ID. Other attributes include member name, phone no, address, and so on. For discount, the relationship to orders is almost the same as the relationship between members and orders. Discount ID is identifier of discount and discount type, rate and effective date are other attributes.
- The identifier for order is order ID and other attributes include date and total amount. An order could contain one or more types of commodities, and each kind of commodities form an order line. Hence an order has one or more order lines, while an order line belongs to exactly one order. An order could have any number of feedbacks while each feedback is for exactly one order. Except the identifier feedback ID, others attributes of feedbacks are username, rate and description.
- As for vendor, warehouse and store, their identifiers are vender ID, warehouse ID and store ID respectively. Other attributes include name, address, phone no and so on. A supply comes from exactly one vendor and goes to exactly one warehouse, but a vendor could send, or a warehouse could receive any amount of supply. An allocation comes form exactly one warehouse and goes to exactly one store, but a warehouse might send, or a store might receive any amount of allocation.
- The identifier for employee is employee ID. Other attributes include employee name, salary, and so on. Each employee has exactly one supervisor; however, a manager has no supervisor. An employee who is a supervisor may supervise any number of employees, but not all employees are supervisors. An employee belongs to at most one department, warehouse or store while each department, warehouse or store has at least one employee.