Wholesale Management System Database
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Milestone/Version	Date
M1V1	10/01/2022

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Section I: Project Description

For most businesses to be profitable, business owners must buy in bulk from original retailers to turn a profit. In order for merchandises to reach the consumer, they must first go through a middleman that purchases stocks in bulk. These stores such as Costco, Target, Walmart, and many grocery stores then stores the merchandises in bulk which is then easily accessible to consumers. To make these transactions quick and efficient, it is important to label each stock being transacted to maximize time and costs. Some problems that these stores may run into is that there may be products with the same name but due to their modes of production such as some products being organic or made with different materials, their costs could end up being vastly different. By labeling each distinct product uniquely, we can combat the issue of mistaking items with one another. Both factory and producers want to increase is productivity, accessibility, speed, and efficiency while limiting costs and security breaches.

Section II: Use Cases

Use Case: Factory wants to increase profit

Actor: Factory Owner (Robert), merchandise

Description: Robert is the owner of a factory that produces all sports-equiptment. His factory makes sports equipment that ranges from baseball bats and gloves, basketballs, tennis balls, and ping pong balls. The factory then sells the sport equiptments to brick and mortar stores such as Big 5, Target and Walmart. Robert wants to focus his attention on selling products that perform well to maximize profit. By focusing his production on his products that perform well, he is able to focus his attention on what is making his company money.

The Wholesale Management Database System is able to help Robert with his goal of maximizing profit by tracking how well each individual product does. If a specific type of basketball that is priced at a specific price point and it sells out everytime, he has the option to mass produce the same basketball at that price point. By focusing on the winning products which is tracked by the database, he is able to allow his company to flourish.

Use Case: Store wants to cut shelf space

Actor: Store (Steve), merchandise, Manufacturer

Description: Steve is the manager of a small grocery store in San Francisco. Since there is only a limited amount of shelf space in this small grocery store, Steve needs to figure out how to maximize profit without sacrificing the quality of the product he sells at his store. Due to every produce having an expiration date, he will need to find the best and worst performers of the merchandises that comes to his store. Steve will have to do this by examining how much product is being thrown away on a monthly scale. Steve can also look at how much net-profit each product is bringing him in.

The Wholesale Management Database System is able to help Steve decide which product should stay or which one should go. He can keep track of the quantity of product moved and how much profit the store is netting at the end of each month. Since the emphasis for most business is to make profit, it would make more fiscal sense to keep a product that does not move a lot of units but brings in more profit.

Use Case: Labeling Quality of Product

Actor: Store (Chris), merchandise, Factory

Description: Chris is the manager of a local liquor store. Chris gets many different brands of vodka, whiskey, and tequila from different distilleries. Sometimes the shipments from different distilleries happen on the same day. In order to differentiate an expensive whiskey from a cheap whiskey, Chris will need to diligently label each whiskey with a unique barcode. By correctly labeling the quality of whiskey from the factory, it will prevent the mistake of overcharging or undercharging customers.

The Wholesale Management Database System is able to help Chris succeed in his liquor store business. With the correct labeling at the distilleries that produces the liquor, it will help the liquor store by selling the correct item to the customers. It can also accurately predict future revenue and losses of the items.

Use Case: Inventory and Profit Tracking

Actor: Store (Roxy), Manufacturer, merchandise

Description: Roxy is a store manager at a local Wholesale store in San Francisco.

Due to the large area space of the store, she has trouble keeping track of all the

items that come in and out on a daily basis. With how competitive shelf space is in

San Francisco, Roxy also has to decide which items stay on or stay off on a daily

basis based on an algorithm she develops (Greedy/DP). However, the database

does not take into account momentum of sales and the duration of time an item

has been in store. She can then decide to give it a trial period of the new items

introduced and try to pick up on the different momentum of sales of the items.

The Wholesale Management Database System is able to track down each item and

quantity of the items based on their unique barcode. However, it is not able to

dive deeper into the deeper non-obvious ways of figuring out whether an item is

profitable or not.

Use Case: Promoting Self-Brand

Actors: Store manager(Lucas), Manufacturer (Brand), merchandise

Description: Brand is the owner a large multi-national store brand. Brand wants to start producing his own brand of lime soda to undercut larger corporations in hopes of gaining a piece of the marketshare. Brand instructs Lucas and all the other store managers in his district to start putting his brand of lime soda on the shelf at a reduced price. Brand instructs Lucas to do a competitive analysis of how his off brand soda performs versus notable name brands.

The Wholesale Management Database Systems will be helpful in determining if the self produced lime soda is selling or if they should venture into something else. By keeping track of the net revenue of their own product versus the notable brands, Brand is able undercut prices of their lime soda since they are directly manufacturing to the brick and mortar stores.

Section III: Database Requirements

1. Factory

   1.1 A factory can distribute merchandise to many and many stores.

   1.2 A factory can produce many to one products.

   1.3 A factory is a manufacturer.

   1.4 A factory can have many to many workers.

2. Stores

   2.1 A store sells to many to many customers.

   2.2 A store can sell many to many products.

   2.3 A store gets their products from one to many factories.

   2.4 A store has many to many locations.

3. Employee

   3.1 An employee is able to work one to many jobs titles.

   3.2 An employee has many to one job title.

   3.3 A store manager is an employee.

   3.4 A CEO is an employee.

   3.5 A farmer is an employee.

   3.6 A factory worker is an employee.

4. Company

    4.1 A company owns many to one stores.

    4.2 A company owns many to one factories.

    4.3 A company has one and only one CEO.

    4.5 A company owns many to many manufacturers..

5. Customers

    5.1 A customer has many to many options to buy a certain merchandise at a

    store.

    5.2 Customers shop at many to one stores.

    5.3 Customers can buy many to one products at the store.

    5.4 A customer is someone that spends money at a store.

6. Grocery Stores

    6.1 A grocery store sells many to many merchandises.

    6.2 A grocery store is a store.

    6.3 A grocery store has many to many employees.

7. Merchandise

    7.1 A merchandise is sold to zero or many customers.

    7.2 A merchandise is a food or a product.

    7.3 A merchandise has one and only one barcode

8. Liquor Stores

    8.1 A liquor store sells many to many kinds liquor.

    8.2 A liquor store is a store.

    8.3 A liquor store must check if customer is an adult through means of ID.

    8.4 A liquor store has many to one employees.

9. Management

    9.1 A CEO is an employee in management.

    9.2 A store manager at a store is an employee in management.

    9.3 A district manager is a manager of store manager but is managed by the

    CEO.

    9.4 There is one and only one district manager per district.

    9.5 Upper management workers are employees of the company.

10. Sports Equiptment Stores

    10.1 There exists many to many sports equipments in the store.

    10.2 A sports equipment store is a store.

    10.3 Sports equipment stores has many to many employees.

11. Big Box Department Stores

    11.1 A big box department store is a store.

    11.2 A big box department store sells many to many merchandises.

11.3 A big box department store has many to many employees.

12. Farm

12.1 A farm distributes many to many grocery stores.

12.2 A farm is a manufacturer.

12.3 A farm has one to many employees.

13. Manufacturer

13.1 A manufacturer produces many to one merchandises.

13.2 A manufacturer has many to one factories or farms.

13.3 A manufacturer is overseen by many to one workers in upper

management.

14. Clothing Stores

14.1 A clothing store is a store.

14.2 A clothing store sells many to many types of clothes.

14.3 A clothing store has many to many employees.

15. Convenience Stores

15.1 A convenience store is a store.

15.2 A convenience store sells many to many types of merchandise.

15.3 A convenience store has many to one employee.

16. Book Store

16.1 A book store is a store.

16.2 A book store sells many to many genres of books.

16.3 A book store has many to one employees.

17. Restaurants

17.1 A restaurant is a store.

17.2 A restaurant shall get food from many to one farms.

17.3 A restaurant shall get merchandise from many to one factories.

17.4 A restaurant has many to many employees.

1. Factory

   *Factory_ID: key, numeric

   *Factory_Location: alphanumeric, multi-value, composite

   ● Street

   ● Zipcode

   ● State

   ● Country

   *Production_type: alphanumeric, multi-value

2. Stores

   *Store_ID: key, numeric

   *Store_Location: alphanumeric, multi-value, composite

   ● Street

   ● Zipcode

   ● State

   ● Country

   *Store_type: alphanumeric, multi-value

3. Employee

   *Employee_ID: key, numeric

*full_name: alphanumeric, composite

- First Name

- Middle Name

- Last Name

*dob: date, multi-value, timestamp

- Year

- Month

- Day

*age: numeric, derived

*job_title: alphanumeric, multi-value

*hourly_wage: numeric, multi-value

4. Company

*company_name: key, alphanumeric

*company_location: alphanumeric, multi-value, composite

- Street

- Zipcode

- State

- Country

5. Customers

*Customer_ID: key, numeric

*fullname: alphanumeric, composite

- First Name

- Middle Name

- Last Name

*dob: date, multi-value, timestamp

- Year

- Month

- day

*age: numeric, derived

6. Grocery Store

*Store_ID: key, numeric

*store_location: alphanumeric, multi-value, composite

- Street

- Zipcode

- State

- Country

*Store_type: alphanumeric, multi-value

*store_Phone: numeric, multi-value, composite

- Country_code

- Area_code

- Phone_number

7. Merchandise

    *merchandise_id: key, numeric

    *merchandise_type: alphanumeric, multi-value

    *barcode: numeric, multi-value

8. Liquor Store

    *Store_id: key, numeric

    *liquor_type: alphanumeric, multi-value

    *Store_location: alphanumeric, multi-value, composite

- Street

- Zipcode

- State

- Country

    *Store_Phone: numeric, multi-value, composite

- Country_code

- Area_code

- Phone_number

9. Management

   *Employee_ID: key, numeric

   *fullname: alphanumeric, composite

   - First Name

   - Middle Name

   - Last Name

   *dob: date, multi-value, timestamp

   - Year

   - Month

   - Day

   *age: numeric, derived

   *position_title: alphanumeric, multi-value

   *salary: numeric, derived

10. Sport Equiptment Stores

*Store_ID: key, numeric

   *Equiptment_Location: alphanumeric, multi-value, composite

   - Street

- Zipcode

- State

- Country

    *Store_type: alphanumeric, multi-value

    *Store_Phone: numeric, multi-value, composite

- Country_code

- Area_code

- Phone_number

11. Big Box Department Stores

    *Store_ID: key, numeric

    *Store_Location: alphanumeric, multi-value, composite

- Street

- Zipcode

- State

- Country

    *Store_type: alphanumeric, multi-value

    *Store_Phone: numeric, multi-value, composite

- Country_code

- Area_code

- Phone_number

12. Farm

    *Farm_ID: key, numeric

    *Farm _Location: alphanumeric, multi-value, composite

- Street

- Zipcode

- State

- Country

    *Production_type: alphanumeric, multi-value

13. Manufacturer

    *Manufacturer_ID: key, numeric

    *Manufacturer _Location: alphanumeric, multi-value, composite

- Street

- Zipcode

- State

- Country

    *Production_type: alphanumeric, multi-value

14. Clothing Store

    *Store_ID: key, numeric

*Store_Location: alphanumeric, multi-value, composite

- Street

- Zipcode

- State

- Country

    *Store_type: alphanumeric, multi-value

    *Store_Phone: numeric, multi-value, composite

- Country_code

- Area_code

- Phone_number

15. Convenience Stores

    *Store_ID: key, numeric

    *Store_Location: alphanumeric, multi-value, composite

- Street

- Zipcode

- State

- Country

    *Store_type: alphanumeric, multi-value

    *ConvenienceStore_Phone: numeric, multi-value, composite

- Country_code

- Area_code

- Phone_number

16. Book Store

    *Store_ID: key, numeric

    *Store_Location: alphanumeric, multi-value, composite

- Street

- Zipcode

- State

- Country

    *Store_type: alphanumeric, multi-value

    *Store_Phone: numeric, multi-value, composite

- Country_code

- Area_code

- Phone_number

17. Restaurant

    *Restaurant_ID: key, numeric

    *Restaurant_Location: alphanumeric, multi-value, composite

- Street

- Zipcode

- State

- Country

  *Store_type: alphanumeric, multi-value

  *Restaurant_Phone: numeric, multi-value, composite

- Country_code

- Area_code

- Phone_number

  *Restaurant_type: alphanumeric, multi-value