IS 4420 Project

April 21, 2025

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Main Objective

Developing system for grocery store that transition into offering online shopping/delivery.

- Keep track of inventory, user experience, turnover rate, etc.
- Users that make an account with us can keep track of their past order history and future products they might want.
- Figure out what products do well and during what time of the year

User Requirements

User Requirements

Customer Account Management

1. As a customer, I want to be able to create an account that tracks my orders.
2. As a customer, I want to access my account and update my information to receive accurate orders.
3. As a customer, I want to add one or multiple delivery addresses in the customer profile so that I can easily choose where I want my order delivered.

Shopping Experience

4. As a user, I want to see what products I can buy and add them to my cart.
5. As a customer, I want to see how much each product costs.
6. As a customer, I want to wishlist multiple items.
7. As a customer, I want to add my favorite items to my collections.
8. As a customer, I want to apply my rewards member discount (coupon) to the order.

Order Processing

9. As a customer, I want to add delivery instructions (notes) so that drivers can successfully have my order delivered.
10. As a customer, I want to receive a confirmation email after placing an order.
11. As a customer, I want to receive a confirmation SMS after placing an order.
12. As a customer, I want to see when my order arrives.

User Requirements

Post-Purchase Activities

As a customer, I want to see my past orders.

As a customer, I want to leave a review on products I have purchased in order that I can share my experience with other customers.

Post-Purchase Activities

As delivery driver, I want to mark orders as delivered so that the database is updated and customers can know.

Inventory Management

As inventory manager, I want to see what product is low.

As inventory manager, I want to see how much is left of each product.

As Inventory manager, I want to categorize products (produce, dairy, bakery, meat, etc.) so that customers can browse.

Administration

As User admin, I want to see what product is sold the most.

As a marketing director, I want to know which products are popular so that I can set promotional prices.

As a customer service specialist, I want to look up customer's past orders by order_id to precisely assist them.

Business Rule

Business Rule

Customer Management

Each customer must have a unique Customer_ID

Each customer profile must contain Customer_ID, First_name, Last_name, email, address, payment information, and phone number

A customer can have multiple saved delivery addresses

Each customer email address must be unique

Only registered customer can place an order

Employee Management

Each employee must have a unique Employee_ID

An employee must be assigned to a specific role (inventory manager, delivery driver, customer service specialist etc).

Each delivery driver can have multiple orders per day

Inventory Management

A supplier provides one or more products

Each supplier must have a unique supplier_ID

A supplier can have supplier_name as attribute

Inventory quantities cannot be less than zero

Inventory quantities must be updated when new supplies from suppliers arrive

Business Rule

Product Management

Each product must have a unique product _ID

Each product must belong to at least one category

Product price must be greater than zero

Products must have descriptions and images

Order Processing

A customer can place more than one order

Each order must have at least one product to be placed

Order status must be updated at each stage (placed, processing, out for delivery, delivered)

Delivery Management

Delivery time slots must be available for customers to select from

Delivery status must be updated in real-time

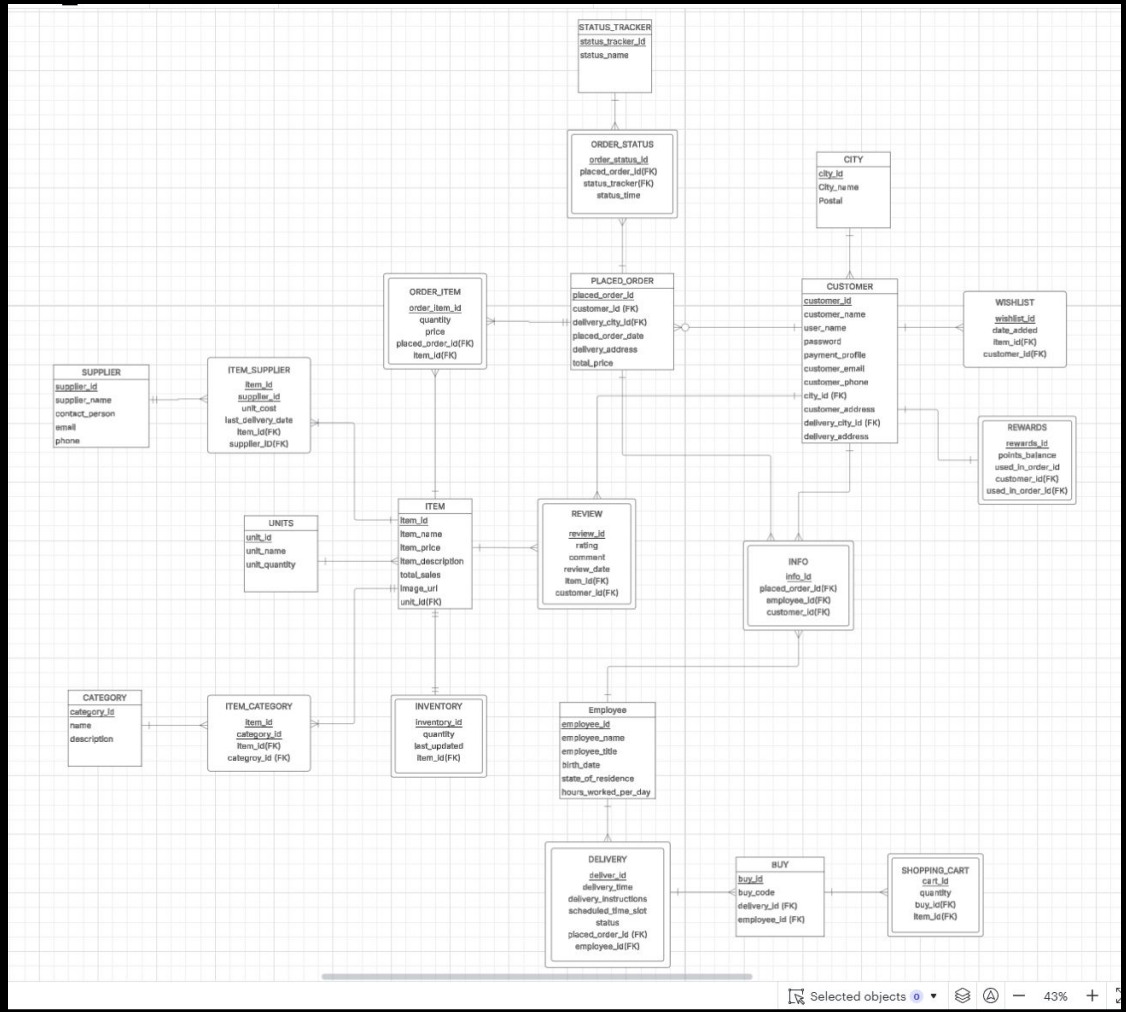
Delivery instructions must be accessible to delivery drivers

Business Questions

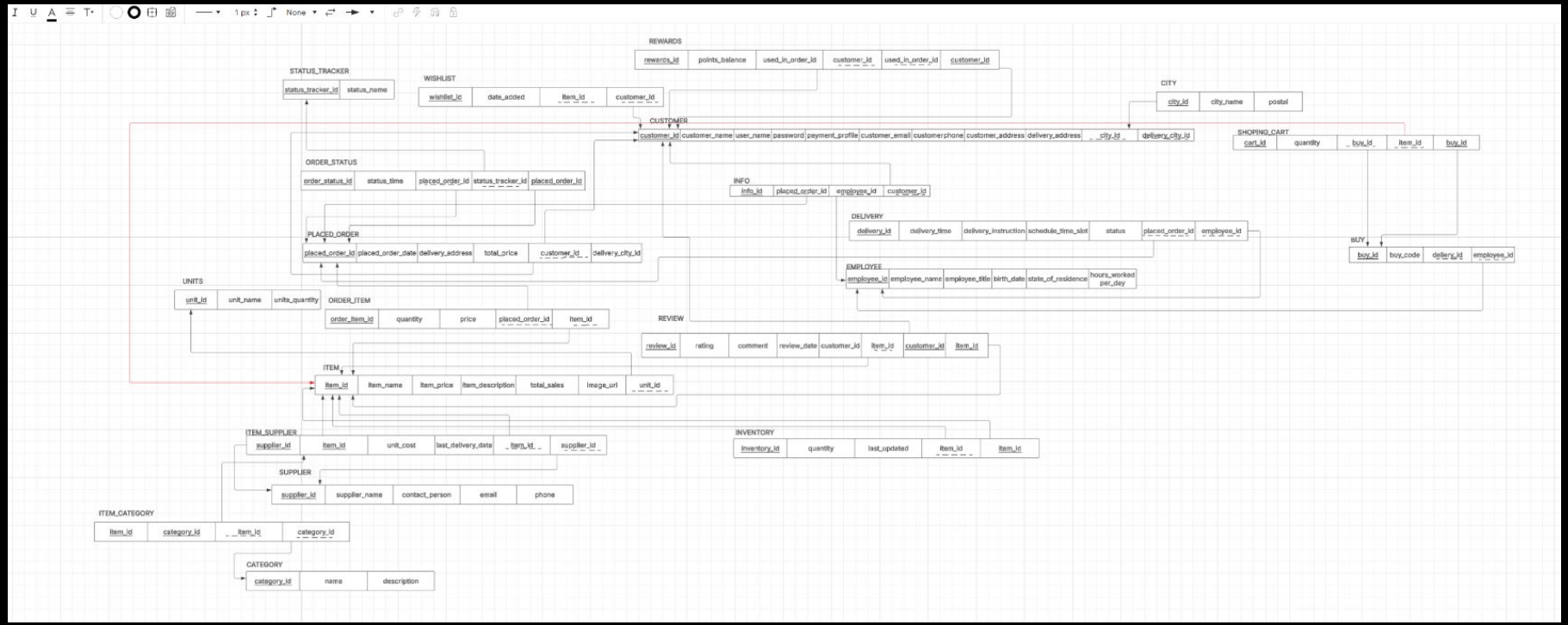
- ➔ See the total sales for the day
- ➔ See what products sell the most in descending order and list the supplier name for each product.
- ➔ See inventory levels of all products and include the category name for each product.
- ➔ Which product has the lowest level of inventory in terms of quantity Which product has the lowest level of inventory in terms of quantity? Also, show the name of the supplier and the last delivery date from that supplier for that product.
- ➔ Keep track of how many employees work more than 8 hours a day and come from CA.
- ➔ See how many orders were placed each day and show the customer names who placed those orders.

- ➔ Which product has the highest sales?
- ➔ See the list of employees who are born after 2000 and come from Utah
- ➔ See the list of employees who are older than 30 years old and have the last name Sam.
- ➔ See the list of products that have less than 100 quantities. And, show the names of the suppliers and the categories those products belong to.
- ➔ Show all product reviews and include the customer name who wrote the review and the product category of the reviewed item.

Conceptual Model


STATUS_TRACKER
status_tracker_id
status_name
ORDER_STATUS
order_status_id
placed_order_id(FK)
status_tracker(FK)
status_time
CITY
city_id
City_name
Postal
ORDER_ITEM
order_item_id
quantity
price
placed_order_id(FK)
Item_id(FK)
PLACED_ORDER
placed_order_id
customer_id (FK)
delivery_city_id(FK)
placed_order_date
delivery_address
total_price
CUSTOMER
customer_id
customer_name
user_name
password
payment_profile
customer_email
customer_phone
city_id (FK)
customer_address
delivery_city_id (FK)
delivery_address
WISHLIST
wishlist_id
date_added
item_id(FK)
customer_id(FK)
SUPPLIER
supplier_id
supplier_name
contact_person
email
phone
ITEM_SUPPLIER
Item_id
supplier_id
unit_cost
last_delivery_date
Item_id(FK)
supplier_ID(FK)
REWARDS
rewards_id
points_balance
used_in_order_id
customer_id(FK)
used_in_order_id(FK)
UNITS
unit_id
unit_name
unit_quantity
ITEM
Item_id
Item_name
Item_price
Item_description
total_sales
Image_url
unit_id(FK)
REVIEW
review_id
rating
comment
review_date
item_id(FK)
customer_id(FK)
INFO
info_id
placed_order_id(FK)
employee_id(FK)
customer_id(FK)
CATEGORY
category_id
name
description
ITEM_CATEGORY
Item_id
category_id
Item_id(FK)
categroy_id (FK)
INVENTORY
inventory_id
quantity
last_updated
Item_id(FK)
Employee
employee_id
employee_name
employee_title
birth_date
state_of_residence
hours_worked_per_day
DELIVERY
deliver_id
delivery_time
delivery_instructions
scheduled_time_slot
status
placed_order_id (FK)
employee_id(FK)
BUY
buy_id
buy_code
delivery_id (FK)
employee_id (FK)
SHOPPING_CART
cart_id
quantity
buy_id(FK)
Item_id(FK)
Selected objects 0
43%

Logical Model


REWARDS
rewards_id
points_balance
used_in_order_id
customer_id
used_in_order_id
customer_id
STATUS_TRACKER
status_tracker_id
status_name
WISHLIST
wishlist_id
date_added
item_id
customer_id
CITY
city_id
city_name
postal
CUSTOMER
customer_id
customer_name
user_name
password
payment_profile
customer_email
customerphone
customer_address
delivery_address
city_id
delivery_city_id
SHOPING_CART
cart_id
quantity
buy_id
item_id
buy_id
ORDER_STATUS
order_status_id
status_time
placed_order_id
status_tracker_id
placed_order_id
INFO
info_id
placed_order_id
employee_id
customer_id
DELIVERY
delivery_id
delivery_time
delivery_instruction
schedule_time_slot
status
placed_order_id
employee_id
BUY
buy_id
buy_code
delivery_id
employee_id
PLACED_ORDER
placed_order_id
placed_order_date
delivery_address
total_price
customer_id
delivery_city_id
EMPLOYEE
employee_id
employee_name
employee_title
birth_date
state_of_residence
hours_worked per_day
UNITS
unit_id
unit_name
units_quantity
ORDER_ITEM
order_item_id
quantity
price
placed_order_id
item_id
REVIEW
review_id
rating
comment
review_date
customer_id
item_id
customer_id
item_id
ITEM
item_id
item_name
item_price
item_description
total_sales
image_url
unit_id
ITEM_SUPPLIER
supplier_id
item_id
unit_cost
last_delivery_date
item_id
supplier_id
INVENTORY
inventory_id
quantity
last_updated
item_id
item_id
SUPPLIER
supplier_id
supplier_name
contact_person
email
phone
ITEM_CATEGORY
item_id
category_id
item_id
category_id
CATEGORY
category_id
name
description

Database Implementation

Sample SQL Code

01

```
create table status_tracker (
  status_tracker_id int auto_increment
primary key,
  status_name varchar(50) not null);
```

02

```
Create table customer (
  customer_id int auto_increment primary key,
  customer_name varchar(100) not null,
  user_name varchar(50)  not null,
  password varchar(255) not null,
  payment_profile varchar(255) not null,
  customer_email varchar(255) not null,
  customer_phone varchar(20) not null,
  customer_address varchar(255) not null,
  delivery_address varchar(255),
  city_id int not null,
  delivery_city_id int,
  foreign key (city_id) references city(city_id),
  foreign key (delivery_city_id) references city(city_id));
```

03

```
create table units (
  unit_id int auto_increment primary key,
  unit_name varchar(50) not null,
  unit_quantity int not null);
```

Answer Business Questions

Query

1. Calculate the Total Sales Revenue for the Current Day
2. Identify the Top Five Products by Sales Volume, Including Supplier Names
3. List Current Inventory Levels for All Products, including Category Names
4. Identify the Product with the Lowest Inventory Quantity, including Supplier Name and Most Recent Delivery Date
5. Display the Ten Most Recent Product Reviews, including Customer Names and Product Category Names.

1. Calculate the Total Sales Revenue for the Current Day

```sql
SELECT DATE(p.placed_order_date) AS sale_date,
       SUM(p.total_price) AS total_sales
FROM placed_order p
JOIN customer c ON p.customer_id = c.customer_id
WHERE DATE(p.placed_order_date) = CURDATE()
GROUP BY sale_date;
```

2. Identify the Top Five Products by Sales Volume, Including Supplier Names

```sql
SELECT i.item_name,
       SUM(oi.quantity) AS total_sold,
       s.supplier_name
FROM item i
JOIN order_item oi ON i.item_id = oi.item_id
JOIN item_supplier isup ON i.item_id = isup.item_id
JOIN supplier s ON isup.supplier_id = s.supplier_id
GROUP BY i.item_name, s.supplier_name
ORDER BY total_sold DESC
LIMIT 5;
```

3. List Current Inventory Levels for All Products, including Category Names

```sql
SELECT i.item_name,
       inv.quantity,
       c.name AS category_name
FROM item i
JOIN inventory inv ON i.item_id = inv.item_id
JOIN item_category ic ON i.item_id = ic.item_id
JOIN category c ON ic.category_id = c.category_id
ORDER BY inv.quantity ASC;
```

```sql
SELECT i.item_name,
       inv.quantity,
       s.supplier_name,
       isup.last_delivery_date
FROM item i
JOIN inventory inv ON i.item_id = inv.item_id
JOIN item_supplier isup ON i.item_id = isup.item_id
JOIN supplier s ON isup.supplier_id = s.supplier_id
WHERE inv.quantity = (SELECT MIN(quantity) FROM inventory)
LIMIT 1;
```

4. Identify the Product with the Lowest Inventory Quantity, including Supplier Name and Most Recent Delivery Date

5. Display the Ten Most Recent Product Reviews, including Customer Names and Product Category Names.

```sql
SELECT i.item_name,
       r.rating,
       r.comment,
       c.customer_name,
       cat.name AS category_name
FROM review r
JOIN customer c ON r.customer_id = c.customer_id
JOIN item i ON r.item_id = i.item_id
JOIN item_category ic ON i.item_id = ic.item_id
JOIN category cat ON ic.category_id = cat.category_id
ORDER BY r.review_date DESC
LIMIT 10;
```

THANK YOU!