CIT 374 Group Project Report

Team Members: Areeb Shaikh, Suhaib Kankodi, Jose Urizar, Ruben Lopez

Areeb Shaikh	Suhaib Kankodi	Jose Urizar	Ruben Lopez
• Established communication structure and file sharing through Teams • Completed final report	• Created database with the use of MySQL • Constructed data loading and querying scripts	• Topic selection • Established business rules • Created EER diagram	• Created UML diagram based on business rules • Provided assistance with overall structural design

Business Rules

Actual Rules

1. Return Policy: Customers can return items within 30 days of purchase if they provide a receipt. This can be observed with the **Return** "weak" entity.
2. Exchange Policy: Items can be exchanged within 30 days for a different size or color, provided they are in stock.
3. Loyalty Program: Members earn 1 point for every $1 spent, redeemable for discounts. This can be observed with the **Loyalty_program** entity.
4. Discount Threshold: Orders over $100 receive a 10% discount. This can be observed with the **Coupon** entity.
5. Free Shipping: Free standard shipping is provided for orders over $75. This can be observed with the **Order** and **Product** entities.
6. Seasonal Discounts: Seasonal discounts (e.g., winter clearance) apply to selected items, with markdowns of up to 50%. This can be observed with the **Coupon** entity.

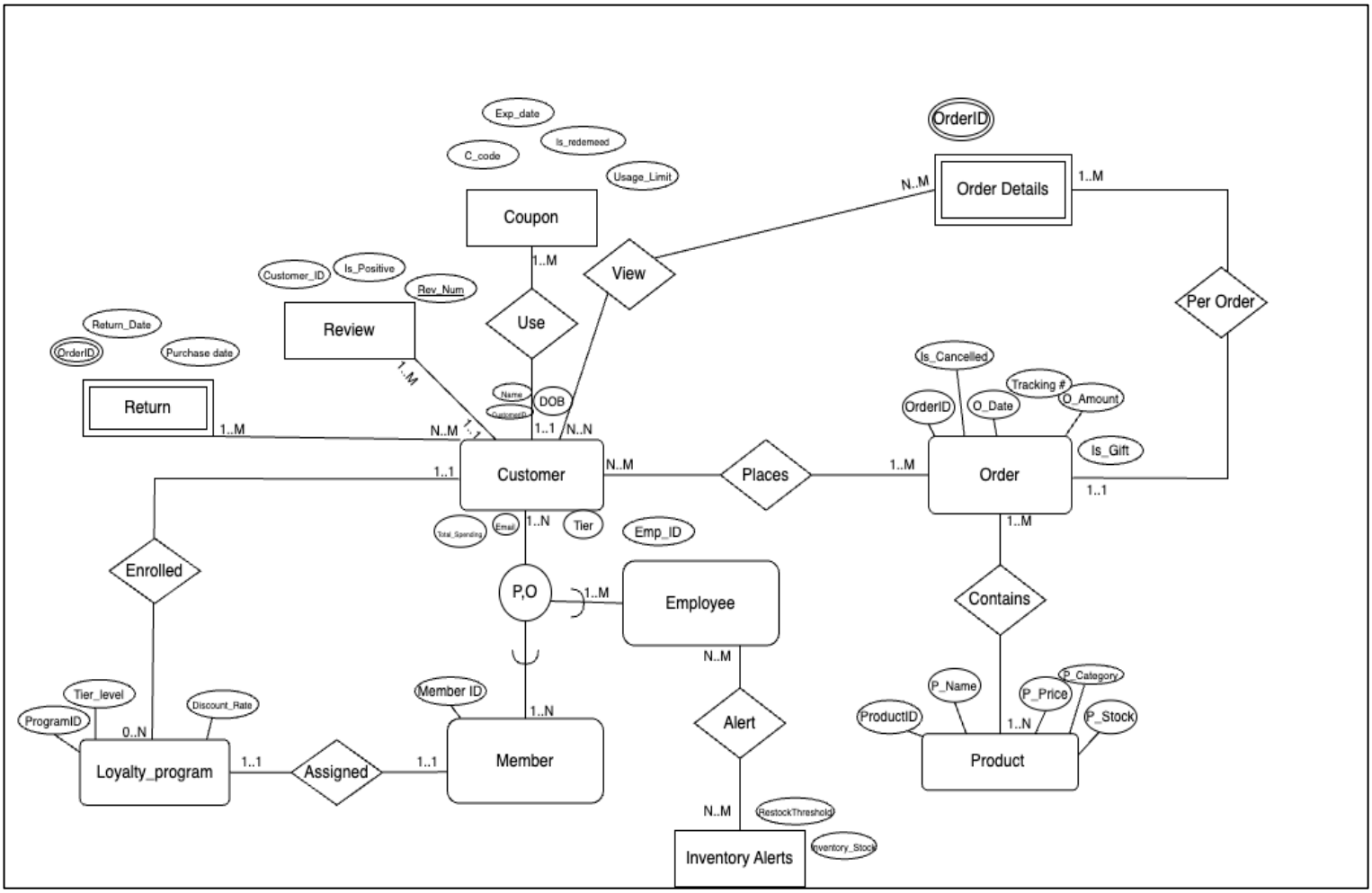
7. Gift Wrapping: For a $5 fee, customers can select gift wrapping during checkout. This can be observed with the **Order** entity**.**
8. Employee Discount: Employees receive a 20% discount on all purchases. This can be observed with the **Employee** entity that is a child of **Customer** entity.
9. Referral Bonus: Earn $10 in-store credit for every person referred. This can be observed with the **Coupon** entity.
10. Supplier Agreement: Suppliers must deliver inventory within two weeks of receiving an order from the store. This can be observed with the **Inventory Alerts** entity.

Notional Rules

1. Birthday Discount: Members receive a 15% discount during their birthday month. This can be observed with the **Coupon** entity.
2. Customer Tiering: Customers are grouped into tiers (Bronze, Silver, Gold) based on total spending. Higher tiers receive exclusive offers. This can be observed with the **Loyalty_program** entity.
3. Limited Edition Products: Limited edition products are capped at 5 items per customer. This can be observed with the **Product** entity.
4. Reserved Stock for Members: Gold-tier members can reserve items for up to 48 hours without payment. This can be observed with the **Loyalty_program** entity.
5. Holiday Gift Card: Customers receive a $10 gift card for purchases over $200 during the holiday season. This can be observed with the **Coupon** entity.
6. New Product Notifications: Gold-tier members receive early access notifications for new products. This can be observed with the **Loyalty_program** entity.
7. Product Reviews: Customers can post reviews for products they've purchased, with a maximum of one review per product. This can be observed with the **Review** entity.

8. Inventory Alert: When inventory for a product drops below 10 units, an automated order is sent to suppliers. This can be observed with the **Inventory Alerts** entity.
9. Personalized Offers: Silver and Gold-tier members receive personalized discount offers based on their purchase history. This can be observed with the **Loyalty_program** entity.
10. Order Cancellation: Orders can be canceled within 2 hours of placement if not yet processed. This can be observed with the **Order** entity

EER Diagram



Entities and Attributes

1. **Customer**:
    - Attributes: Customer_ID, Name, DOB, Email, Total_Spending, Tier
    - Represents individuals who interact with the system

2. **Coupon**:
    - Attributes: C_code, Exp_date, Is_redeemed, Usage_Limit
    - Represents discount vouchers issued to customers.

3. **Order**:
    - Attributes: OrderID, O_Date, O_Amount, Tracking #, Is_Gift, Is_Cancelled
    - Represents purchases made by customers.

4. **Product**:
    - Attributes: ProductID, P_Name, P_Price, P_Stock, P_Category
    - Represents items available for purchase.

5. **Order Details**:
    - Attribute: OrderID
    - Represents additional details for each order.

6. **Employee**:
    - Attribute: Emp_ID
    - Represents employees managing specific aspects of the business.

7. **Return**:
    - Attributes: OrderID, Return_Date, Purchase_Date
    - Represents returned items and related details.

8. **Review**:
    - Attributes: Rev_Num, Customer_ID, Is_Positive
    - Represents customer feedback on orders.

9. **Loyalty Program**:
    - Attributes: ProgramID, Tier_level, Discount_Rate
    - Represents a customer rewards program.

10. **Member**:
    - Attributes: Member_ID
    - Represents customers enrolled in the loyalty program.

11. **Inventory Alerts**:
    - Attributes: ProductID, RestockThreshold, Inventory_Stock
    - Represents notifications for inventory management.

Relationships

1. **Customer and Order**:
   - A customer can place multiple orders (1:N).
   - Each order is linked to one customer.

2. **Order and Product**:
   - An order can contain multiple products (1:M).
   - A product can appear in multiple orders (N:M).

3. **Customer and Coupon**:
   - A customer can use multiple coupons (1:N).
   - Each coupon can be used by multiple customers (M:N).

4. **Order and Order Details**:
   - Each order has corresponding order details (1:M).

5. **Customer and Loyalty Program**:
   - A customer can enroll in one loyalty program (1:1).
   - Each loyalty program can have multiple customers (N:1).

6. **Loyalty Program and Member**:
   - Each loyalty program assigns tiers or levels to its members (1:N).

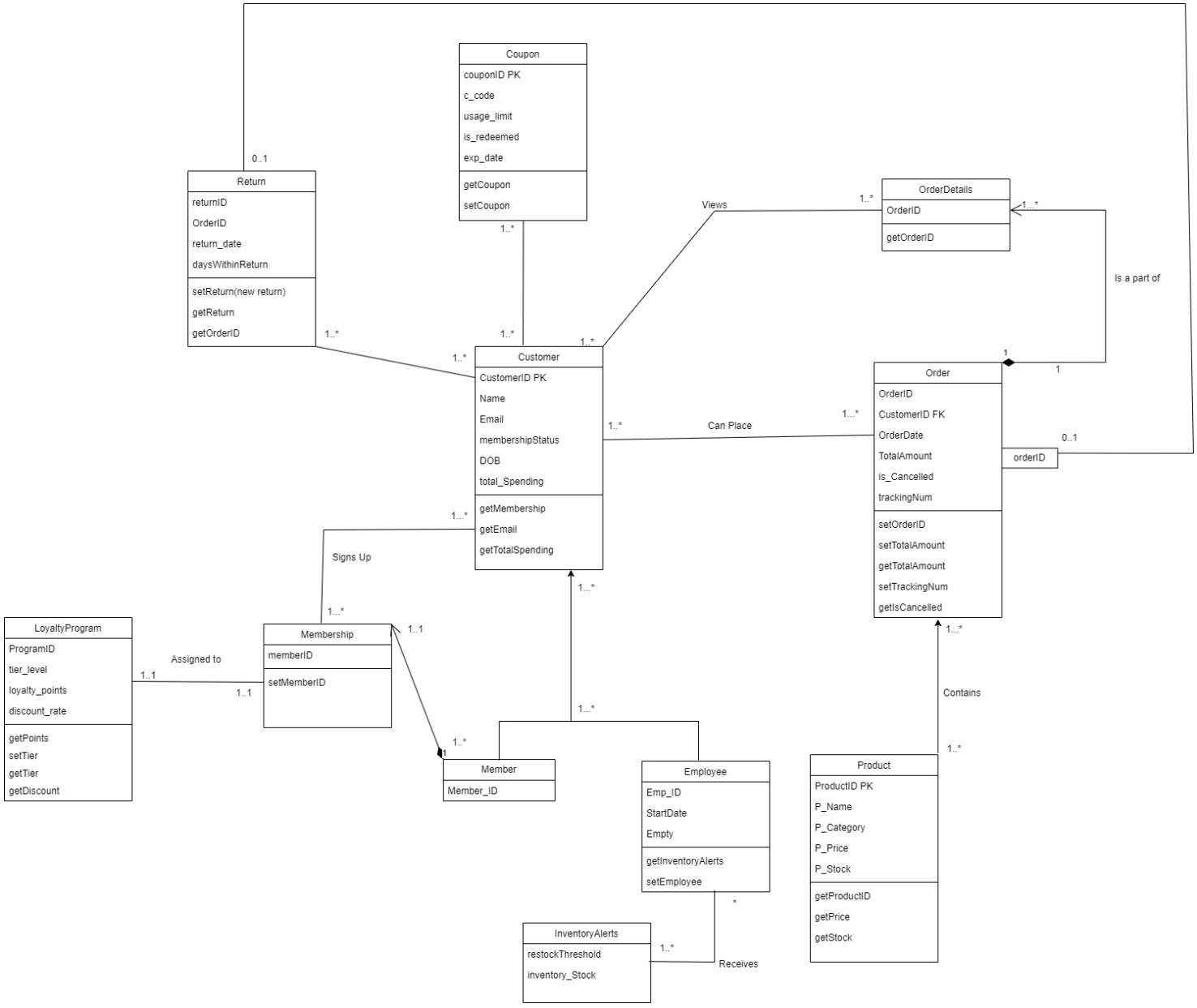
7. **Employee and Alert**:
   - Employees monitor and manage inventory alerts (N:M).

8. **Order and Return**:
   - An order can result in multiple returns (1:M).

9. **Customer and Review**:
   - A customer can write multiple reviews (1:M).
   - Each review is linked to one customer.

10. **Review and Product**:
    - Reviews can be associated with products (N:M).

UML Diagram


Coupon
couponID PK
c_code
usage_limit
is_redeemed
exp_date
getCoupon
setCoupon
Return
returnID
OrderID
return_date
daysWithinReturn
setReturn(new return)
getReturn
getOrderID
OrderDetails
OrderID
getOrderID
Views
Is a part of
Customer
CustomerID PK
Name
Email
membershipStatus
DOB
total_Spending
getMembership
getEmail
getTotalSpending
Order
OrderID
CustomerID FK
OrderDate
TotalAmount
is_Cancelled
trackingNum
setOrderID
setTotalAmount
getTotalAmount
setTrackingNum
getIsCancelled
orderID
Can Place
Signs Up
LoyaltyProgram
ProgramID
tier_level
loyalty_points
discount_rate
getPoints
setTier
getTier
getDiscount
Assigned to
Membership
memberID
setMemberID
Member
Member_ID
Employee
Emp_ID
StartDate
Empty
getInventoryAlerts
setEmployee
InventoryAlerts
restockThreshold
inventory_Stock
Receives
Product
ProductID PK
P_Name
P_Category
P_Price
P_Stock
getProductID
getPrice
getStock
Contains

Relational Model **Primary Key** **Foreign Key**

Customer (Customer_ID, First_Name, Last_Name, DOB, Tier, Total_Spending)

Loyalty Program (Lprogram_ID, Tier_Level, Discount_Rate)

Member (Member_ID, Lprogram_ID)
- Lprogram_ID foreign key refers to Lprogram_ID in Loyalty Program, NOT NULL

Orders (Order_ID, O_Date, Discount_Rate, Tracking_Num, Is_Gift, Is_Cancelled, Customer_ID)
- Customer_ID foreign key refers to Customer_ID in Customer, NOT NULL

Order Details (Order_Detail_ID, Quantity, Price, Order_ID, Product_ID)
- Order_ID foreign key refers to Order_ID in Orders, NOT NULL
- Product_ID foreign key refers to Product_ID in Product, NOT NULL

Product (Product_ID, Name, Price, Category, Stock)

Review (Review_Number, Is_Positive, Customer_ID, Product_ID)
- Customer_ID foreign key refers to Customer_ID in Customer, NOT NULL
- Product_ID foreign key refers to Product_ID in Product, NOT NULL

Coupon (Coupon_ID, Exp_Date, Usage_Limit, Is_Redeemed)

Consume Coupon (Consume_ID, Customer_ID, Coupon_ID)
- Customer_ID foreign key refers to Customer_ID in Customer, NOT NULL
- Coupon_ID foreign key refers to Coupon_ID in Coupon, NOT NULL

Return (Return_ID, Return_Date, Purchase_Date, Order_ID)
- Order_ID foreign key refers to Order_ID in Orders, NOT NULL

Inventory Alert (Alert_ID, Restock_Threshold, Inventory_Threshold, Product_ID)
- Product_ID foreign key refers to Product_ID in Product, NOT NULL

Physical Design – 3NF

How to Run Code

1. Begin by running the database creation script. This will create the table and set the necessary constraints, preparing the database for data ingestion.

2. Copy and paste the data loading script into your workspace and click “Run”. This will populate the table rows and columns with company data.

3. Finally, copy and paste the queries from the query script. This will allow you to access and sort the data based on various conditions and parameters. You can then view the data returned by the queries. Note: You will likely have to run one query at a time.