[DB] Phase 4 Report
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a. Problem Statement(copy from description)

The EasyDelivery Company provides food/products delivery service for customers. Customer can place takeout/delivery orders through the EasyDeliveryApp. Now, EasyDelivery would like one relational database to store the information about their management system to be able to carry out their work in an organized way. They have some major modules such as Employee and Customer, Restaurant and Order. Employee's information is stored in the database, such as employee ID, Name (First, Middle, Last), Address, Gender, Date of Birth(should be constrained as 16 years or older) and Phone number (one person may have more than one phone number).The Employee'sID should have the format "EXXX", where X is a number from 0-9.(Hint: you can use regexp_like() function).Details of a customer such as ID, Name (First, Middle, Last), Address and Phone number are recorded. You are free to define the format of customer ID.Customer is further classified as Ordinary Customer and Silver Member. Every silver member owns one member card issued by Staff. Employee and Silver Member can further become Gold Member. Every gold member owns a GoldPass, which can allow the member has free delivery fee in their orders10 times monthly. Employee is further classified asAreaManager, Delivererand Staff. The start date of the designation of each employee is stored. Every deliverer is supervised by an area manager, an area manager may supervise many deliverers. Every deliverer needs to register at least one Vehicle for delivery.Vehicle's information such as Plate Number, Maker,

ModelandColorare stored.Area managers work in an Area(Richardson, Frisco, Plano, Dallas, etc.), andis responsible for making contracts with theShopsin his working area. The contract start time of each shopis stored. There are two types of Shops: Restaurants and Supermarkets. Restaurants' Name, Type (FastFood, BBQ, Buffet, Drink, etc.), Address, Area, Business Phone Number are recorded. A Restaurant can have more than one type. Supermarkets' Name, Address, BusinessPhone Number are recorded. Supermarkets sell various Products, one product may be sold in different supermarkets at different price. Supermarkets maintain Inventories of their products showing how much products in stock. Each Shopopens and closes at specific times following a schedule table.Shops may have different open and close time in different days in a week.Shops sometimes may provide Promotion. Each Promotion includes a unique Promotion code, and its description. When Customers place orders, customer may choose to use promotion codes.Customers can make Comments to the Shops. The comments include rating score (can be 1,2,3,4,5), and comment contents. Details of Orders such as Order ID, Order Contents, Total Balance are recorded. Each order belongs to corresponding Restaurants. Customer can select different payment types to pay for the order.Details of Payment such as unique Payment Confirm Number, Payment Type, Payment Timeis recorded. Deliverer will deliver the order with a specific registered vehicle.

b. Project Questions

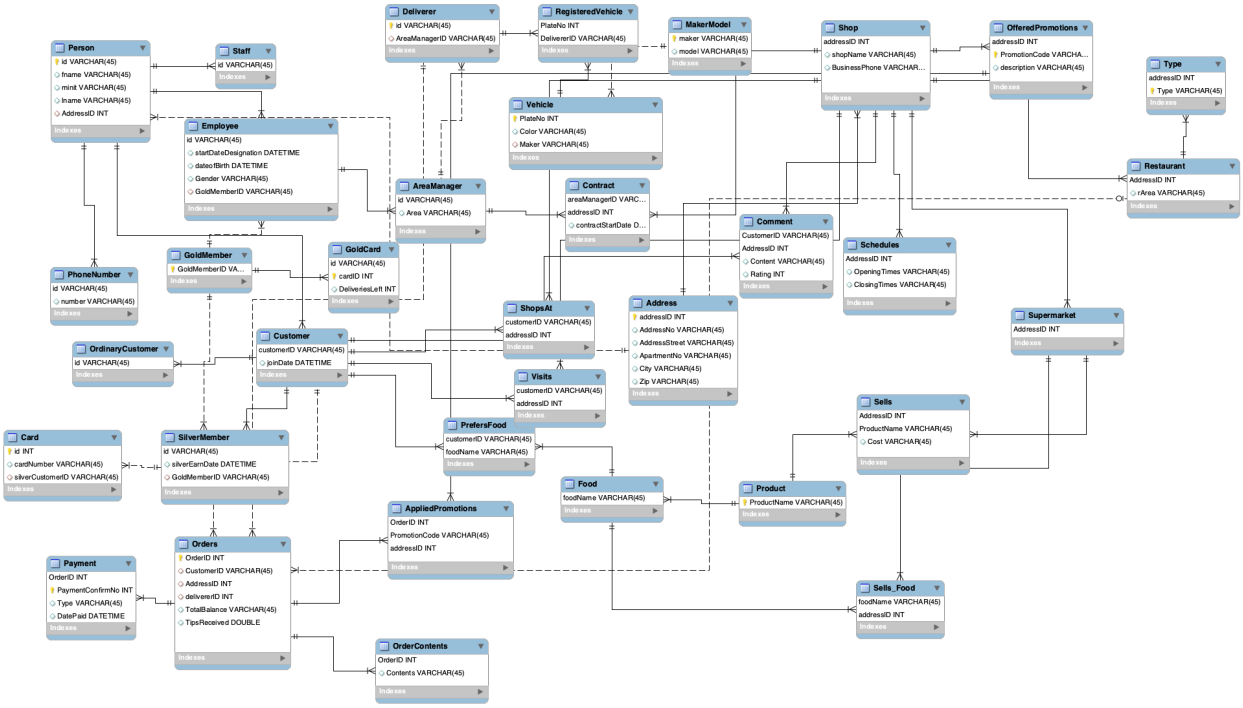
1.) The ability to model superclass/subclass relations was actually very important in our shopping mall management system. We have lots of

classes with similar traits (like customers and employees both having an ID, and Address), and using superclass/subclasses make creating our database much simpler.

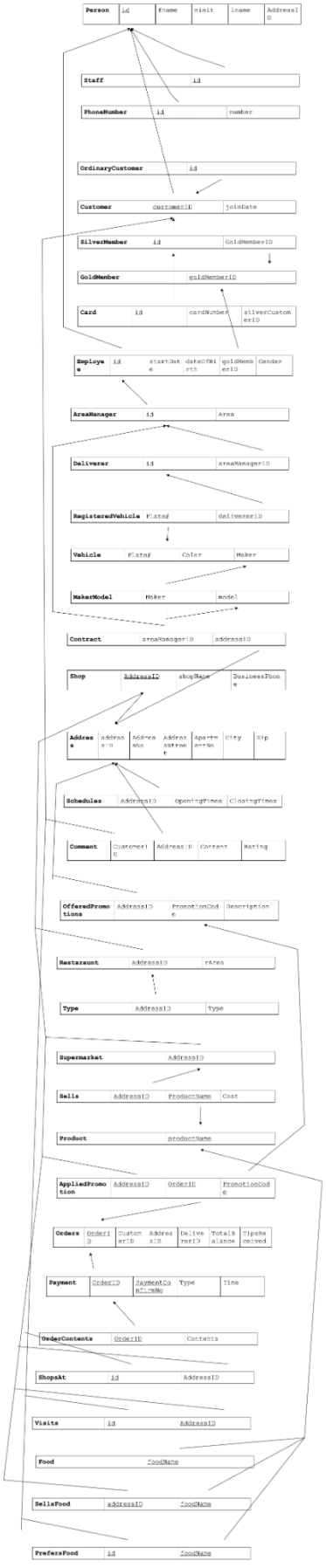
2.) We're going to add the rules prefersFood (a specific customer can prefer a specific Food), Food (a new object that is sold_by a restaurant), sellsFood (a restaurant can sell a specific food item), shops_at (a relationship that shows what shops a customer frequently shops at), visits (tracks every time a customer visits a store), and tips, which tracks the tips given to a deliverer on an order.

3.) Our justification for using a relational DBMS is that we can accurately convey the workings of this simple shopping mall in DBMS, with us tracking information about the various customers, employees, and transactions done in the shopping mall.

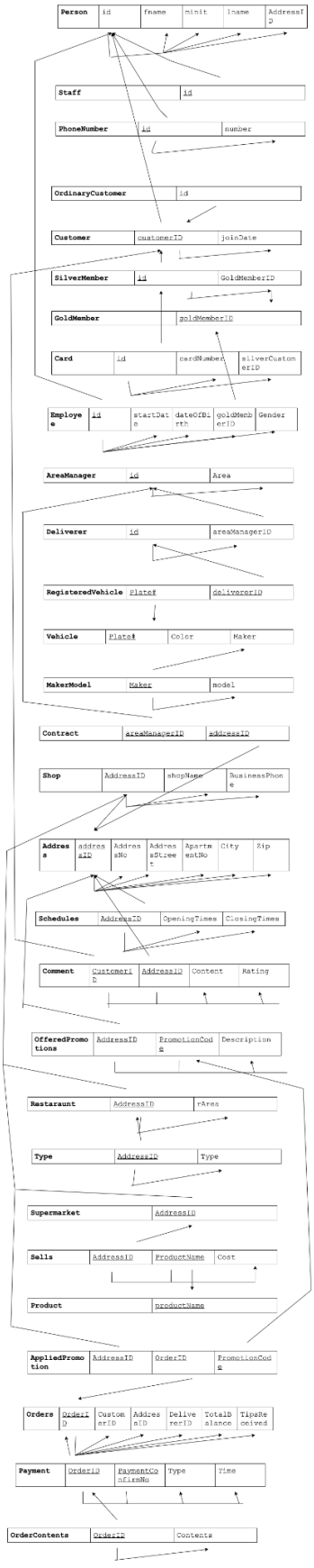
c. EER Diagram attached as modelEER.png



d. Relational Diagram attached as relational.png


Person id fname minit lname Address1 0
Staff id
PhoneNumber id number
OrdinaryCustomer id
Customer customerID joinDate
SilverMember id GoldMemberID
GoldMember goldMemberID
Card id cardNumber silverCustom erID
Employe e id startDat e dateOfBi rth goldMemb erID Gender
AreaManager id Area
Deliverer id areaManagerID
RegisteredVehicle PlateF delivererID
Vehicle PlateF Color Maker
MakerModel Maker model
Contract areaManagerID addressID
Shop AddressID shopName BusinessThou e
Address addres sID Addres sNo Addres sStreet Apartm entNo City Zip
Schedules AddressID OpeningTimes ClosingTimes
Comment Customer ID AddressID Content Rating
OfferedPromo tions AddressID PromotionCod e Description
Restaraunt AddressID rArea
Type AddressID Type
Supermarket AddressID
Sells AddressID ProductName Cost
Product productName
AppliedPromo tion AddressID OrderID PromotionCod e
Orders Order I D Custom erID Addres sID Deliv erID Totals alance Tips Re ceived
Payment OrderID PaymentCo nfirmNo Type Time
OrderContents OrderID Contents
ShopsAt id AddressID
Visits id AddressID
Food foodName
SellsFood addressID foodName
PrefersFood id foodName

e. Dependency Diagram (attached as DepDiagram.png)


Person
id
fname
minit
lname
AddressID
Staff
id
PhoneNumber
id
number
OrdinaryCustomer
id
Customer
customerID
joinDate
SilverMember
id
GoldMemberID
GoldMember
goldMemberID
Card
id
cardNumber
silverCustomerID
Employee
id
startDate
dateOfBirth
goldMemberID
Gender
AreaManager
id
Area
Deliverer
id
areaManagerID
RegisteredVehicle
Plate#
delivererID
Vehicle
Plate#
Color
Maker
MakerModel
Maker
model
Contract
areaManagerID
addressID
Shop
AddressID
shopName
BusinessPhone
Address
addressID
AddressNo
AddressStreet
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City
Zip
Schedules
AddressID
OpeningTimes
ClosingTimes
Comment
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Description
Restaraunt
AddressID
rArea
Type
AddressID
Type
Supermarket
AddressID
Sells
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ProductName
Cost
Product
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AddressID
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PromotionCode
Orders
OrderID
CustomerID
AddressID
DeliverID
TotalBalance
TipsReceived
Payment
OrderID
PaymentConfirmNo
Type
Time
OrderContents
OrderID
Contents

f. Refer to file “apr30.sql” for tables and file “views.sql” for the 5 views and 13 queries.