Task 3: RELATIONAL DATABASE DESIGN

WALMART GLOBAL TECH

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An ERD or Entity Relationship Diagram is used to describe a Database System. It contains different symbols and connectors that visualize two important information;
- Major entities within the system scope
- Inter-relationship among the system scope.

Some ERDs include MySQL, Oracle, SqLite etc.

Task: *draft a UML class diagram describing the data processors for a pipeline. The component responsible for reading in input data is being designed by another engineer, so you only need to worry about what happens to the data when it reaches your processor. You may assume three classes already exist:*

- *Datapoint: this class represents both raw and processed data points. Any time data moves between methods you may use this class as an abstraction.*
- *ModeIdentifier: an enum used to identify a processor mode.*
- *DatabaseIdentifier: an enum used to identify a database connection.*

My task is to draft an ERD for an appropriately normalized relational database that satisfies these requirements:

The database should store information related to the following products. Pet food, which has a name, manufacturer, weight, flavor, and target health condition. Pet toys, which have an associated material, name, manufacturer, and durability. Pet apparel, which has a color, manufacturer, size, name, and specific care instructions. Each product should be associated with one or more animals. Each product should be associated with a manufacturer. The database should track customers and their transactions. It should store customer names and email addresses. Customers can make transactions to purchase one or more products. Each transaction should store the date and the products involved. The database should track shipments to various Walmart locations. Each location should be represented by a name and a zip code. A shipment is recorded as an origin, a destination, and a collection of products, each with an associated quantity.

The possible ERD is as shown;

[Product]<-1---N-[Animal]
[Product]<-1---1-[Manufacturer]
[Product]<-1---N-[Transaction]
[Transaction]<-1---1-[Customer]
[Transaction]<-1---N-[Shipment]
[Shipment]<-1---1-[Origin]
[Shipment]<-1---1-[Destination]

Where:
Product represents the product entity, which can be a pet food, toy, or apparel. It has attributes such as name, manufacturer, weight (for pet food), flavor (for pet food), target health condition (for pet food), material (for toys), durability (for toys), color (for apparel), size (for apparel), and care instructions (for apparel).

Animal represents the animal entity, which is associated with one or more products. It has attributes such as name and species.

Manufacturer represents the manufacturer entity, which is associated with one or more products. It has attributes such as name and address.

Transaction represents the transaction entity, which is associated with one or more products and a customer. It has attributes such as date and total price.

Customer represents the customer entity, which is associated with one or more transactions. It has attributes such as name and email address.

Shipment represents the shipment entity, which is associated with one or more transactions and has a collection of products with associated quantities. It has attributes such as origin, destination, and delivery date.

Origin and Destination represent the location entities, which are associated with shipments as the origin or destination. They have attributes such as name and zip code.

This ERD represents the relationships between the entities as follows:

A product can be associated with one or more animals. This is represented by the "1 to N" relationship between the Product and Animal entities.

A product is associated with one manufacturer. This is represented by the "1 to 1" relationship between the Product and Manufacturer entities.

A product can be involved in one or more transactions. This is represented by the "1 to N" relationship between the Product and Transaction entities.

A transaction is associated with one customer. This is represented by the "1 to 1" relationship between the Transaction and Customer entities.

A transaction can be associated with one or more shipments. This is represented by the "1 to N" relationship between the Transaction and Shipment entities.

A shipment has one origin and one destination. This is represented by the "1 to 1" relationships between the Shipment entity and the Origin and Destination entities.