**Question-1:** A popular clothing brand have multiple outlet store and an online store front. They would like to develop a web-based software to operate their outlets and their online store. Prepare basic process flow, UML diagram and ER diagram for the proposed software. Here are the basic customer requirements:

1. Customer can filter the product searching according to size, gender, age-group, price-range, etc.

2. Customer can view current stock availability of a specific product and size at the outlet stores,

3. Registered customers will receive rewards for shopping.

4. Registered customer can receive their order delivery from the outlet stores without paying any shipping fees.

5. All customers have to pay shipping fees to receive home delivery of their order.

6. Customers can exchange their product within 15 days of purchase from any outlet store.

7. Customers can view and pre-order upcoming products.

8. Customers can request an out-of-stock product in a specific size.

9. The company may offer limited-time-sale on some products.

10. The cutlets storekeepers will receive rewards based on the sale volume.

**ER-Diagram:**

Based on the provided requirements, we can identify the following entities, relations, and attributes:

**Entities:**

* Customer
* Product
* Outlet Store
* Online Store
* Order
* Pre-order
* Reward
* Sale
* Size

**Relations:**

* Customer-Product (related to filtering, stock availability, rewards, pre-ordering, out-of-stock requests)
* Customer-Order (related to delivery and shipping fees)
* Customer-Reward (related to rewards for shopping)
* Outlet Store-Product (related to stock availability and sale volume)
* Product-Size (related to size filtering, stock availability, and out-of-stock requests)
* Product-Order (related to orders and pre-ordering)

**Attributes:**

* Customer: ID, name, email, address
* Product: ID, name, price, description
* Outlet Store: ID, name, location
* Online Store: ID, website
* Order: ID, customer ID, product ID, quantity, order date
* Reward: ID, customer ID, reward points
* Sale: ID, product ID, outlet store ID, sale date
* Size: ID, size value (e.g., small, medium, large)

Note: The process flow, UML diagram, and ER diagram would require additional details and design considerations.

**Schemas:**

**Customer** (ID, Name, Email, Address)

**Product** (ID, Name, Price, Description)

**Outlet** **Store** (ID, Name, Location)

**Online** **Store** (ID, Website)

**Order** (ID, CustomerID, ProductID, Quantity, OrderDate, DeliveryMethod, ShippingFees)

**Pre-Order** (ID, CustomerID, ProductID, SizeID, Date)

**RewardProgram** (ID, CustomerID, RewardPoints)

**SaleEvent** (ID, OutletStoreID, EventDate, PromotionalDetails)

**Size** (ID, Value)

**Relationships:**

**Customer**-**Product** (CustomerID, ProductID)

**Customer-Order** (CustomerID, OrderID)

**Customer-RewardProgram** (CustomerID, RewardProgramID)

**OutletStore-Product** (OutletStoreID, ProductID)

**Product-Size** (ProductID, SizeID)

**Product-Order** (ProductID, OrderID)

**SaleEvent\_OutletStore** (SaleEventID, OutletStoreID)

**Customer\_PreOrder**(CustomerID, PreOrderID)

**Product\_PreOrder**(ProductID, PreOrderID)