

The database system will support a comprehensive **Amazon** e-commerce platform that includes different types of users, product management, orders, logistics, and payment processing. Below is a description of each entity and its requirements.

Each **User** is identified by a unique UserId and is described by their first name, last name, phone number, email, hashed password, membership date, and user type (e.g., customer, seller, or admin).

A **Customer** is a type of user, distinguished by their unique UserId, and can be categorized into different customer types. Premium customers have additional attributes such as PremiumStartDate, PremiumEndDate, and MembershipPlan. The customer can select products and add to own cart, add products to the list and each customer has one or more addresses. The List relationship has attributes such as ListName ,Private, Receiver and ListBirthdate(month and year).

An **Admin** is another type of user, identified by their unique UserId, and is responsible for managing the system. Admins have a role and their last login time is recorded.

A **Seller** is also a type of user, identified by their UserId. Sellers manage shops and are described by their ShopId and SellerRate.

Each **Address** is uniquely identified by an AddressId and includes details such as ZipCode, Neighborhood, Province, City, Country, Flat, Apartment, and AddressType. Addresses can belong to customers or shops, identified via UserId or RegistrationNumber.

A **Shop** is identified by its RegistrationNumber and includes attributes such as ShopDescription, ShopRate, ShopName, CreationDate, and ShopPhone. Sellers are manager for shops.

A **Product** is uniquely identified by a ProductId and includes details such as ProductName, Brand, SKU(Stock keeping unit for product family), ShortDescription, FullDescription, IsApproval, Status, Rating, DateAdded, TaxClass, BarCode, and BasePrice. Products belong to Shops via the Sells relationship.

ProductOptions define additional characteristics of products. Each option is identified by an OptionId, has an OptionName, and can be mandatory or optional. Products are linked to options through the Has_Option relationship.

OptionValues specify possible values for product options. Each value has an OptionValueID, DimensionImpact, WeightImpact, AdditionalPrice, and is linked to a ProductOption.

ProductVariations are specific combinations of product options. Each variation is identified by a VariationId and includes attributes like Status, StockLevel, Weight, OptionCombination, and Price. Variations are associated with option values through the Combination relationship.

Category organizes products into hierarchical categories. Each category is identified by a CategoryId and includes a CategoryName and optional MediaID. Categories can have parent-child relationships through the Subcategory entity.

Logistics entities handle order delivery and are identified by a LogisticID. Attributes include TrackingNumber, DeliveryStatus, Recipient, ShippingDate, DeliveryDate, and AddressId. DeliveryStatus define the possible statuses of orders, such as "Pending," "InTransit," and "Delivered." The LogisticType attribute distinguishes between different logistics providers. These are AMAZON_FBA and Other as subclasses. Other subclass has a attribute LogiName. Each Logistic has a one Address.

PaymentMethods describe how customers pay for orders. Each method has a PaymentID and attributes like InstallmentCount, InstallmentAmount, InstallmentRate, and CreatedAt. Payment methods can include bank cards or giftcard.

BankCards are linked to payment methods and include attributes like CVV, ExpDate, CardLastFourDigits, and CardHolderName.

GiftCard are also linked to payment methods and track balances, requestCode, CreateDate and expiration dates.

SKUManagement tracks stock levels and restocking details for products. Each SKU has attributes like SupplierName, RestockDate, StockLevel, and RestockThreshold. Each product has SKU Managements but each SKU Management has one product.

Discounts provide promotional offers for products. Discounts are identified by a DiscountID and have attributes like Rate, Limit, Status, CouponFlag, PercentageFlag, FixedAmountFlag, and PrimeDiscount. Discounts are applied to products.

Review allows customers to provide feedback on products. Each review is linked to an order item and includes attributes like ReviewId, Rating, Comment and ReviewDate. Shops response reviews.

OrderItem details the individual products in an order. Each item is identified by an OrderItemId and includes attributes like OrderItemId, Price, OrderStatus. The OrderItem shipped the Logistic.

CartItem place the contents of a customer's Cart. Each record includes attributes like Quantity, FinalPrice, and CartItemId. Carts are linked to customers and products. CartItem turns into OrderItem after the purchase process.

Cart represents a customer's shopping session. Each cart has a CartID and attributes like CartStatus, CreateDate, UpdateDate, and TotalPrice. Each Cart owns one customer.

ApprovedCart represents selected CartItems. Each approved cart has a unique ApprovedCartId. It also has a TotalPrice attribute. The ApprovedCart keeps PaymentMethod.

This schema provides a detailed foundation for managing an e-commerce system with comprehensive user, product, and transaction support.