Northeastern University

E-COMMERCE MANAGEMENT SYSTEM

P3. FINAL ERD – Logical Model Design

Group Number – 20

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Overview:

In this project, we will create a database for an e-commerce company that deals with inventory management and product organization. The main goal is to simplify and optimize daily tasks so that e-commerce companies may successfully make data-driven decisions. Key datasets such as transactional data, real-time inventory status, supplier information, and customer profiles will be meticulously managed by the system.

The overall goal of this e-commerce management system's technical architecture is to offer a high-performance, scalable, and dependable solution for managing various e-commerce operations.

Explanation:

S.No	Entities	Description
1.	Consumer	Represents the customer or client who interacts with the business. Attributes include Consumer_ID (Primary Key), Initial_Name, Family_Name, Email_Address, Contact_Number, Postal_Address, Consumer_Status, Start_Date.
2.	Item	Defines the products offered, with attributes such as item ID, name, classification, cost, detailed description and classification_ID (Foreign key).
3.	Billing	A financial document associated with transactions and orders, including billing details, the address to which the bill is delivered, Billing_ID(primary key), Billing_Date, Delivery_Address, Transaction_ID(Foreign key), Billing_Status, Order_ID (Foreign Key). Furthermore, we have created two subtype entities of the Billing supertype entity. These two subtypes are “Bulk Billing” & “Individual Billing”. These are having the billing status as their discriminator. The Attritbute of bulk billing are mentioned as Bulk_Billing_ID, Bulk_Quantity and Total_Cost, while the individual billing has only one attribute which is Individual_Billing_ID
4.	Transaction Information	Keeps track of the financial transactions made by consumers, including Transaction_ID(Primary Key), Amount, Rebate, Transaction_method, Transaction_status, Billing_ID (Foreign Key) action.
5.	Delivery	Details the logistics of delivering an order, with attributes for DeliveryID (Primary key), Departure_Date, Arrival_Date, Postal_Address, Delivery_Status, Delivery_Method, Order_ID (Foreign Key).
6.	Order	Information on orders placed by consumers, Order_ID (Primary Key), Order_Date, Customer_ID(Foreign Key), Review_ID (Foreign Key), Delivery_ID (Foreign Key), Billing_ID (Foreign Key).

7.	Catalog	Contains a list of items available, classified by Catalog_ID (Primary key), Catalog_Classification, Stock_Cost, Location, Received_Date, Vendor_ID (Foreign Key), Item_ID (Foreign Key).
8.	Vendor	Suppliers of items with attributes including Vendor_ID (Primary Key), Vendor_Name, Email_Address, Contact_Number, and Postal_address.
9.	Classification	Categorizes items, with attributes such as classification ID (Primary key) and name.
10.	Utilized Item	An associative entity that tracks the usage of items, with attributes for the Utilised_ID (Primary Key), Utilized_Date, Inventory_ID (Foreign Key) and Item_ID (Foreign Key).
11.	Order line	A specific line item within an order, with attributes including Order_Line_ID (Primary Key), Order_ID (Primary Key), Item_ID (Primary Key), and Quantity.
12.	Review	An associative entity which represents any input or feedback provided by the consumer, with attributes such Review_ID (Primary Key), Review_Date, Review_Type, Order_ID (Foreign Key), Consumer_ID (Foreign Key).
13.	Item Catalog	An associative entity which is giving us details about item present in the catalog which contains Item_Location, Stock_Quantity, Received_Date. Furthermore, Item_ID and catalog_ID are the foreign keys for the Item_Catalog.

Brief Description of changes which are made to the initial ERD are:

1. **Clear Naming Format**: Clear naming for the individual entities and attributes are used in this particular case.

2. **Foreign Keys**: The Foreign keys are explicitly mentioned and defined with their relationship between their specific entities.

3. **Primary Keys**: The Primary keys have been mentioned which are unique to their entities.

4. **Relationships**: All the relationships are between the individual entities are well defined with the correct justification given which in turn would eliminate any confusion.

5. **Relational Change**: The relationship between the transactional information and consumer has been eliminated, with the help of relation between Consumer table and Billing table, we can get multiple transactional attributes like amt, rebate and type of transactions.

6. **Billing Status:** We have created two new subsets for the Billing table, which are “Bulk Billing” & “Individual Billing”, which was a suggestion given by Professor. Furthermore, the new subset will give us a better insight about the multiple billings made by a particular consumer which is helpful to identify the frequent consumer of our E-Commerce services.

7. **Item_Catalog:** Item Catalog is now identified as an Associative entity, with the “Item” and catalog, with its respective attributes giving us insight about the stock quantity which would be available for the particular catalog id, catalog location and the received date.

8. **Review:** We have basically created an Associative entity, using the “Consumer” and “Order”, with attributes like review date, review type, and the review rating. This will moreover help our system to maintain the item availability and quality for better consumer satisfaction.

9. **Utilized_Item:** An Associative entity has been created with “Item”, “Catalog” and “Vendor”. It will not only help the vendor to maintain the catalog more efficiently but also manage the stock quantity and cost details.

E-COMMERCE MANAGEMENT SYSTEMDATA MODEL: