**DATABASE DESIGN FOR WHOLESALE MANAGEMENT SYSTEM**

**Project - 3**

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**DATA MODEL E-R DIAGRAM**

Diagram

Description automatically generated

|  |  |  |
| --- | --- | --- |
| **CUSTOMER** | | |
| **Attributes** | **Data Type & Size** | **Comments** |
| Customer\_id | NUMBER | PRIMARY KEY, AUTO GENERATED |
| First\_Name | VARCHAR2(50) | NOT NULL |
| Last\_Name | VARCHAR2(50) | NOT NULL |
| Email\_id | VARCHAR2(50) | UNIQUE KEY, NOT NULL |
| Contact\_No | NUMBER | NOT NULL |
| User\_name | VARCHAR2(50) | UNIQUE KEY, NOT NULL |
| Password | VARCHAR2(100) | NOT NULL |
|  |  |  |
|  |  |  |
| **PRODUCT** | | |
| **Attributes** | **Data Type & Size** | **Comments** |
| Product\_id | NUMBER | PRIMARY KEY, AUTO GENERATED |
| Category\_id | NUMBER | A FOREIGN KEY WHICH REFERENCES Category\_ID FROM PRODUCT CATEGORY, NOT NULL |
| Product\_Name | VARCHAR2(50) | NOT NULL |
| Warehouse\_id | NUMBER | NOT NULL, FOREIGN KEY REFERENCE Warehouse\_ID FROM WAREHOUSE TABLE |
| Manufacturing\_Date | DATETIME | NOT NULL |
| Expiry\_Date | DATETIME | NOT NULL |
| Product\_Price | FLOAT | NOT NULL |
| Quantity | NUMBER | NOT NULL |
|  |  |  |
| **PRODUCT\_CATEGORY** | | |
| **Attributes** | **Data Type & Size** | **Comments** |
| Category\_id | NUMBER | PRIMARY KEY, AUTO GENERATED |
| Category\_name | VARCHAR(50) | NOT NULL, UNIQUE KEY |
|  |  |  |
| **WAREHOUSE** | | |
| **Attributes** | **Data Type & Size** | **Comments** |
| Warehouse\_id | NUMBER | PRIMARY KEY, AUTO GENERATED |
| Warehouse\_name | VARCHAR2(50) | NOT NULL |
| Address | VARCHAR2(100) | NOT NULL |
| City | VARCHAR2(50) | NOT NULL |
| State | VARCHAR2(50) | NOT NULL |
| Country | VARCHAR2(50) | NOT NULL |
| Zipcode | NUMBER | NOT NULL |
|  | | |
|  |  |  |
| **SUBSCRIPTION** | | |
| **Attributes** | **Data Type & Size** | **Comments** |
| Subscription\_id | NUMBER | PRIMARY KEY, NOT NULL |
| Subscription\_Type | VARCHAR(20) | NOT NULL |
| Discount | FLOAT | UNIQUE KEY, NOT NULL |
| Valid\_Duration\_Month | VARCHAR(20) | UNIQUE KEY, NOT NULL |
| Price | FLOAT | NOT NULL |
|  |  |  |
| **CUSTOMER\_MEMBERSHIP** | | |
| **Attributes** | **Data Type & Size** | **Comments** |
| Membership\_id | NUMBER | PRIMARY KEY, NOT NULL |
| Customer\_id | NUMBER | A FOREIGN KEY WHICH REFERENCES Customer\_id FROM CUSTOMER |
| Subscription\_id | NUMBER | A FOREIGN KEY WHICH REFERENCES Subscription\_id FROM SUBSCRIPTION |
| Date\_of\_Purchase | TIMESTAMP | NOT NULL |
| Date\_of\_expiry | TIMESTAMP | NOT NULL |
|  |  |  |
| **CARD\_DETAILS** | | |
| **Attributes** | **Data Type & Size** | **Comments** |
| Customer\_id | NUMBER | A FOREIGN KEY WHICH REFERENCES Customer\_ID FROM CUSTOMER |
| Card\_number | NUMBER | PRIMARY KEY, NOT NULL |
| Card\_type | VARCHAR(30) | NOT NULL |
| Validity\_date | DATE | NOT NULL |
| Name\_on\_card | VARCHAR(50) | NOT NULL |
|  |  |  |
|  | | |
|  |  |  |
|  |  |  |
| **ORDER\_PRODUCT** | | |
| **Attributes** | **Data Type & Size** | **Comments** |
| Order\_product\_id | NUMBER | PRIMARY KEY, NOT NULL |
| Order\_id | NUMBER | A FOREIGN KEY WHICH REFERENCES Order\_ID FROM ORDER |
| Product\_id | NUMBER | A FOREIGN KEY WHICH REFERENCES Product\_ID FROM PRODUCT |
| Order\_Quantity | NUMBER | NOT NULL |
| unit\_price | FLOAT | NOT NULL |
|  |  |  |
| **ORDER** | | |
| **Attributes** | **Data Type & Size** | **Comments** |
| Order\_id | NUMBER | PRIMARY KEY, NOT NULL |
| Customer\_id | NUMBER | A FOREIGN KEY WHICH REFERENCES Customer\_ID FROM CUSTOMER |
| Order\_date | TIMESTAMP | NOT NULL |
| Shipped\_Date | DATE | NOT NULL |
| Status\_ID | NUMBER | A FOREIGN KEY WHICH REFERENCES Status\_ID FROM ORDER STATUS |
| Order\_total | FLOAT | NOT NULL |
| Discount\_total | FLOAT | NOT NULL |
| Transaction\_mode | VARCHAR2(50) | NOT NULL |
|  |  |  |
| **ORDER\_STATUS** | | |
| **Attributes** | **Data Type & Size** | **Comments** |
| Status\_ID | NUMBER | PRIMARY KEY, NOT NULL |
| Status | VARCHAR(30) | NOT NULL, UNIQUE KEY |

**COUNTRY**

|  |  |  |
| --- | --- | --- |
| **Attributes** | **Data Type & Size** | **Comments** |
| Country\_id | NUMBER | PRIMARY KEY, NOT NULL |
| Country\_name | VARCHAR2(50) | NOT NULL, UNIQUE KEY |

**STATE**

|  |  |  |
| --- | --- | --- |
| **Attributes** | **Data Type & Size** | **Comments** |
| State\_id | NUMBER | PRIMARY KEY, NOT NULL |
| State\_name | VARCHAR2(50) | NOT NULL, UNIQUE KEY |
| Country\_id | NUMBER | NOT NULL, A FOREIGN KEY WHICH REFERENCES Status\_ID FROM COUNTRY |

**CITY**

|  |  |  |
| --- | --- | --- |
| **Attributes** | **Data Type & Size** | **Comments** |
| City\_id | NUMBER | PRIMARY KEY, NOT NULL |
| City\_name | VARCHAR2(50) | NOT NULL |
| State\_id | NUMBER | NOT NULL, A FOREIGN KEY WHICH REFERENCES State\_ID FROM STATE |

**Objectives: -**

To design a database for wholesale companies which can provide the following features: -

• Accuracy in maintaining data and inventory structure.

• Managing the product storage and summarize point of sales.

• To provide sales data for each day.

• To provide details on goods expiry dates.

• Eradicate the redundancies.

• To maintain the integrity of data.

**Problem Statement: -**

1. The current system stocks products, orders, and purchases items using a manual inventory system.

2. The level of security for data, transactional documents, and inventory is low.

3. Existing data does not include any records of food expiration dates.

4. Inadequate and unstructured data is recorded, and data cannot be accessed because records are stored in multiple files and formats.

5. Total sales reports for the day are determined by the amount of money in the cashier deck, making it impossible to provide data to the owner for him to make sound business decisions.

6. Billing information, tickets, and coupons are not properly handled from wholesale to store.

7. The tasks of processing, adding, and managing are difficult.

8. Time-consuming and insufficient data on physical product counts.

9. Missing daily order data, insufficient data for predicting supply requirements, and logistics are all factors that contribute to these difficulties.

10. Updating the database on regular basis so that product's list, quantity left, and amount required may be calculated.

11. By providing the necessary data to the user privileges and the information which need to be provided are provided through customer's id, their location and amount of product that are purchased.

12. Once the payment is processed the database will update the stocks and amount needed to be delivered and updated quantity is displayed in database

**Proposed Solutions: -**

To overcome the above problems, a database model can be used. The solutions are: -

1. Rather than manually searching for logistics availability and username details, we can use natural keys in databases to prevent user redundancy and ensure data consistency.

2. Using the database design, we can obtain pricing and customer information by including the Customer ID and Product ID as PRIMARY KEYS that uniquely identify the records.

3. No information about the cards is provided. Using this database, we can manage customer credit card information and identify discounted rates.

4. Managing of subscription is difficult so using this database, the subscription expiry dates, balance of customers in cards and discounted rates can be identified and managed properly.

5. Keep note of product identifiers, names, and quantities.

6. Keep note of the customer's information, including the buyer's id, name, address, and the product id that must be purchased.

7. Information about the consumer, such as name, email address, and customer ID.

8. A list of payments that have been made or are currently being processed.

9. If the amount falls below a particular level, the product will be purchased. Make a monthly profit calculation.

10. If the needed quantity is not in stock, it cannot be sold to the customer, and the delivery date must be postponed until the

work can be completed

**Views**

1. Customers view **(product id, product name, unit price, quantity, product category, and wholesaler name)** when they want to buy products.
2. When a consumer selects all of the products on the site, the order product **entity (product id, product\_name with unit price, and order\_total at the end, where they can view the total of the products in the cart)** is automatically added to the cart.
3. Customers view the card data **(card\_number, card\_type, validity\_time, name\_on\_card)** once they proceed with the payment and select which card they want to use for the purchase.
4. If the Wholesaler admin wants to assure the entire income between dates, he should look at the order **(order\_id, order\_date, and discount\_amt), and then sum of (discount\_amt)** will give him the total revenue between those days, allowing us to filter out the data based on order date.
5. If a wholesaler needs to examine customer information from a specific city, state, or country, they can look up **(customer\_id, first\_name, last\_name, contact\_no, city\_name, state\_name, country\_name)** and filter the data by city, state, and country.
6. If a wholesaler wants to inspect a product and its quantity, he can look at the **(product\_id, category\_name, product\_name, and quantity)** to get an idea of the stock and plan stock for the future.
7. If a wholesaler wants to examine how many orders were placed in each city, state, or country, he can filter the data by city, state, or country and see **(order\_id, customer.first\_name, customer.last\_name)** and total number of entities gives the data of number of customers.
8. If the management department wants to examine the subscription details, they filter out the data depending on the subscription type **(membership id, customer.first\_name, customer.last\_name, subscription\_type, date\_of\_purchase and date\_of\_expiry, customer.contact\_no, customer.email\_id)**. This allows management to determine which customers are nearing the end of their subscriptions and send them a renewal email.

**Note :- (……..) = shows all the attributes from different entities**

**Data Flow Diagram**

1. **Customer Onboarding**

Diagram

Description automatically generated

1. **Subscription Module**

Diagram

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1. **Order Management**

**Diagram

Description automatically generated**

1. **Transaction Module**

**Diagram

Description automatically generated**

**Define Security**

**User Level Access: -**

Customer: -

* Permissions

1. Access to previous Order details
2. Access to product category on portal
3. Access to order status
4. Access to contact details
5. Access to order\_product (cart details)

Administrator: -

* Permissions

1. Customer Detail of every customer
2. Access to customer address details
3. Access to warehouse details
4. Access to product details

Subscription Handler Manager: -

* Permissions

1. Accessibility and update of subscription details
2. Access to customer membership details

Transaction Manager: -

* Permissions

1. Access to all card details
2. Access to all order details