Data warehousing
Assignment01
Creating a Representative Database Spaghetti

Syed Muhammad Irtiza Zaidi-23973
Azizullah khan - 24931

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Business scenario

The business scenario is an e-commerce marketplace that facilitates transactions between sellers and customers. The platform supports various types of users, including admins, sellers, and customers. Sellers can create their stores, list products, and manage their inventory. Customers can browse through the products, add them to their cart or wishlist, and make purchases using different payment methods. The platform also supports promotions, ratings, and reviews for products and stores. Additionally, the platform has a survey feature for gathering customer feedback and an event feature for promoting special occasions.

The marketplace offers essential infrastructure and services, such as a user-friendly website, secure payment processing, and customer support. Sellers gain access to a vast customer base, streamlined logistics, and reduced operational complexities. Meanwhile, buyers benefit from a diverse range of products, competitive pricing, and the convenience of online shopping. This symbiotic relationship fosters business growth for sellers and enhances the overall shopping experience for customers.

List of Business Entities

1. User: Represents a user in the system. A user can be an admin, seller, or customer.
2. Seller: Represents a seller who owns a store in the marketplace.
3. Store Type: Represents the type or category of a store.
4. Store: Represents a store in the marketplace owned by a seller.
5. Product: Represents a product listed in the marketplace.
6. Rating: Represents a rating given by a user to a product or store.
7. Product Store: Represents the relationship between a product and a store, including the stock quantity and discount.
8. Order: Represents an order placed by a customer.
9. Order Item: Represents an item in an order, including the product, quantity, and price.
10. Payment Method: Represents a payment method used by a customer to make a purchase.
11. Card: Represents a credit or debit card used by a customer for payment.
12. Promotion: Represents a promotion or discount offered by a seller for a product.
13. Product Promotion: Represents the relationship between a product and a promotion.
14. Customer: Represents a customer who can browse and purchase products in the marketplace.
15. Category: Represents a category of products.
16. Product Category: Represents the relationship between a product and a category.
17. Wishlist: Represents a list of products added to a customer's wishlist.
18. Cart: Represents a customer's shopping cart.
19. Event: Represents an event or special occasion promoted in the marketplace.
20. Survey: Represents a survey created by the platform to gather customer feedback.
21. Employee: Represents an employee of the company that manages the e-commerce marketplace.

Domain specific information

To establish a solid foundation for our e-commerce platform, we will initially focus on implementing the following key features:

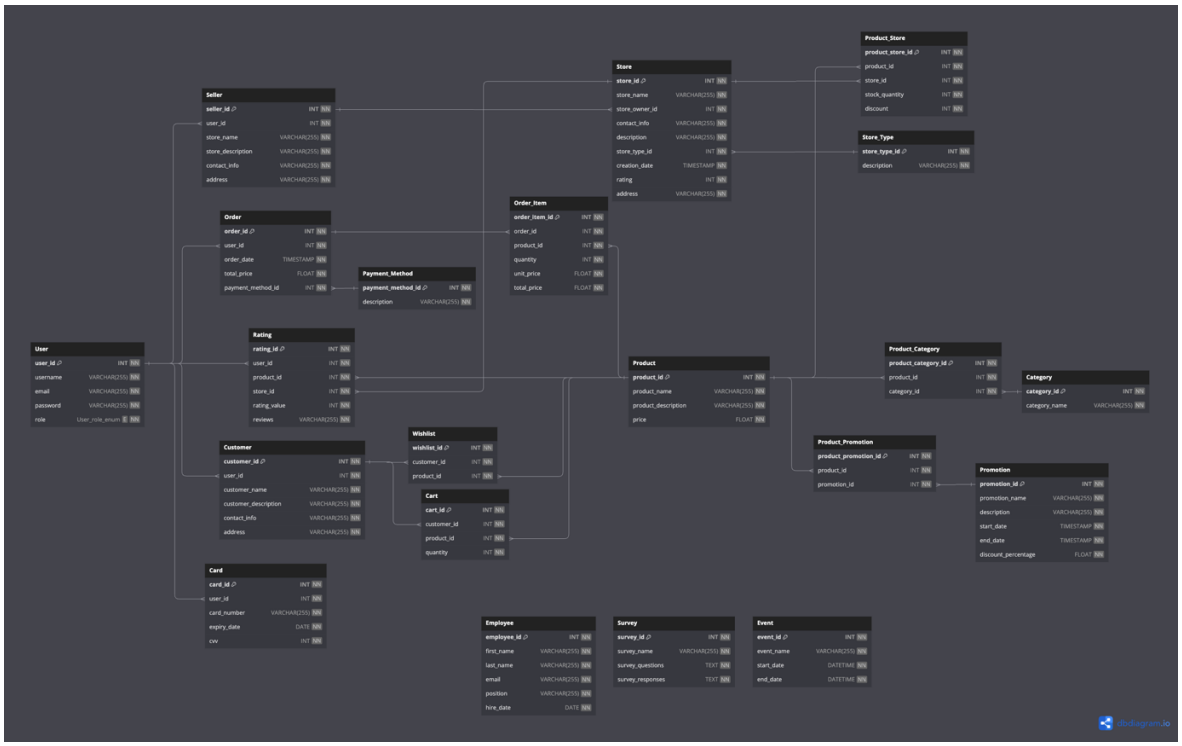
1. Seller Performance Metrics: Assess seller performance through metrics or tables that record successful transactions, customer reviews, and ratings.
2. Customer Analytics: Customize marketing and recommendations by analyzing customer behavior, preferences, and purchase history in analytics tables.
3. Inventory Management: Develop a robust inventory management system to monitor stock levels, handle backorders, and provide real-time availability information for physical products.

As our platform grows, we plan to incorporate additional domain-specific features:

4. Product Attributes: Augment the Product entity with type-specific attributes, such as brand, specifications, and warranty information for electronics.
5. Shipping Information: Streamline order fulfillment by capturing shipping details, such as addresses, tracking information, and methods, in dedicated tables or fields.
6. Product Variants: Enhance the product catalog's comprehensiveness by incorporating product variants, such as sizes and colors, into the data model.
7. Sales Tax and VAT: Guarantee precise tax calculation and application by taking into account the customer's location and relevant tax regulations for sales taxes or VAT.

By starting with these core features and gradually integrating more advanced functionalities, we aim to create a tailored and efficient e-commerce platform that addresses the unique needs of our products or services and target market.

ERD Snapshot



Steps needed to replicate the database.

Chosen RDBMS: MySQL

1. Execute the provided DDL script in MySQL to create the required tables.
2. Utilize a Python notebook to extract all table data into CSV files.
3. Certain data, such as payment methods, store types, categories, etc., remains constant and is stored in CSV files.
4. Additional data is generated dynamically in Python, ensuring consistency and compatibility with the predefined table structures. A sample dataset has already been created and saved in separate CSV files.
5. You can conveniently view and analyze the generated data in Excel, as the column names across tables have been standardized for clarity.
6. Establish a connection to MySQL using a Python script and seamlessly upload the constant and dynamically generated data into the corresponding tables.

By following this approach, you ensure data consistency, ease of exploration in Excel, and streamlined data migration into MySQL tables.