Mercado Libre XS

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Abstract

This poster describes the database design for the Mercado Libre XS e-commerce application, a platform where users can buy and sell new and used products. The document covers everything from defining the business model, focused on facilitating e-commerce for small and medium-sized businesses, to identifying needs through user stories, such as account creation, advanced search, shopping cart management, and promotions. From these stories, the application's functionalities are designed, and an entity-relationship model is defined that includes key entities such as Users, Products and Transactions, with detailed relationships between them. Finally, constraints and properties are established to ensure the integrity and functionality of the database, ensuring that each component is properly structured to support the platform's operations.

Introduction

E-commerce has transformed the way people buy and sell products, in that way the databases of these applications must be robust to support such amounts of data. This article describes the phases of the database design of Mercado Libre-XS, starting with the collection of user stories, the identification of functionalities, and the construction of an entity-relationship model.

Content

To build an application from scratch, an objective is required, in this case the business model of the application. The app as a commerce platform, the main objective is to facilitate electronic commerce so that it is accessible for anyone to buy and sell products, and as a consequence of the above, it allows small and medium-sized companies to expand and improve their visibility .

3.1 Methodology Used

The methodology used to design the MER (Model Entity Relation) was first recollect the information required, and use the 10-steps method explained by the teacher Carlos Sierra, which is:

- Define Components
- Define Entities
- Define Attributes per Entity
- Define Relationships
- Define Relationships Types
- First Entity-Relation Draw
- Split Many-Many Relationships
- Second Draw
- Get Data Structure
- Constrains And Properties

Processes and Information Required

In order to build the application we require more information apart from the business model, such as user stories and from there we can extract functionalities to turn them into entities and finally make the entity relationship model.

The first phase to be able to design the database is to know the necessities of the user. For this, first an interview was conducted with people asking what they would like to see in a Commerce applications, where they mentioned their point of view based on personal experiences with similar applications. These interviews were transformed into user stories where all the interviews are summarized, these user stories are in the format.

As a (role), I want (action), so what (impact)

The interviews with people using similar commerce apps revealed the following needs:

- Create an account to start buying or selling products.
- Filter products by criteria such as price, category, and location.
- List products with detailed descriptions, images, and prices.
- Manage a shopping cart and checkout securely.

These stories were transformed into key features of the app, such as advanced product search, the creation of personalized online stores, and the ability to offer discounts and promotions.

Database Design

The database design process involved identifying the key components of the application and mapping them to entities and relationships. The key components include transactions, customer service, products, and deliveries. From these components, essential entities such as user, product, seller, and transaction were defined, each with their specific attributes.

Entities and Attributes

The main entities of the data model include:

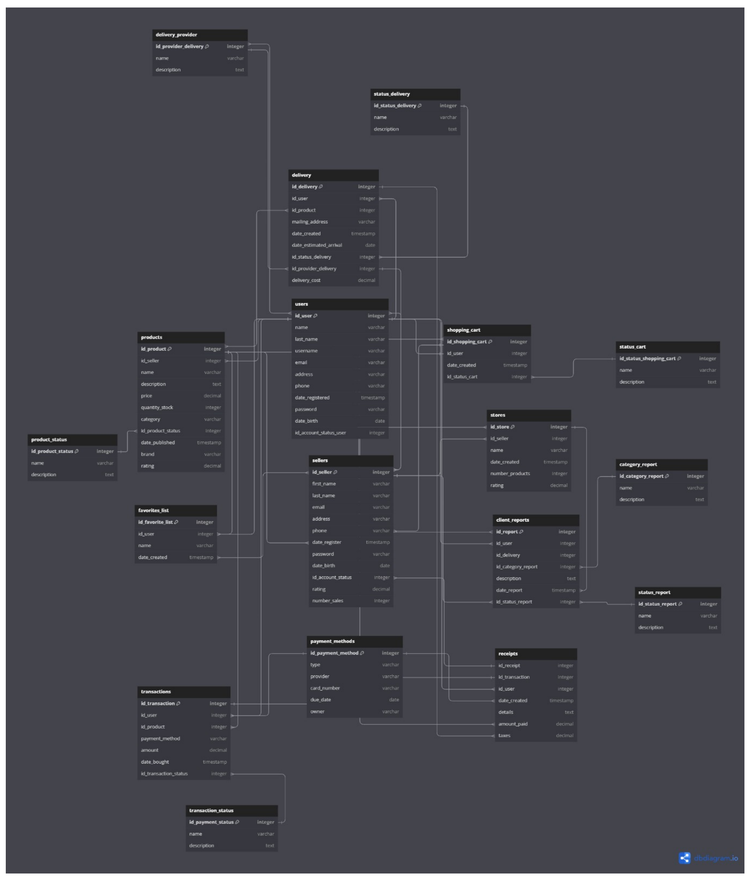
- **User**: Includes attributes such as name, surname, address, email, and account status.
- **Product**: Includes details such as name, description, price, category, and product status.
- **Transaction**: Captures purchase details, such as payment method, transaction status, and amount.

Consider that there is more entities, but the space is limited so thoose three are the mainly entities.

Relationships Between Entities

Key relationships were defined between entities to ensure the database integrity and usage. For example, a user can have multiple transactions, and a product can be part of several transactions and shopping carts.

First MER Design

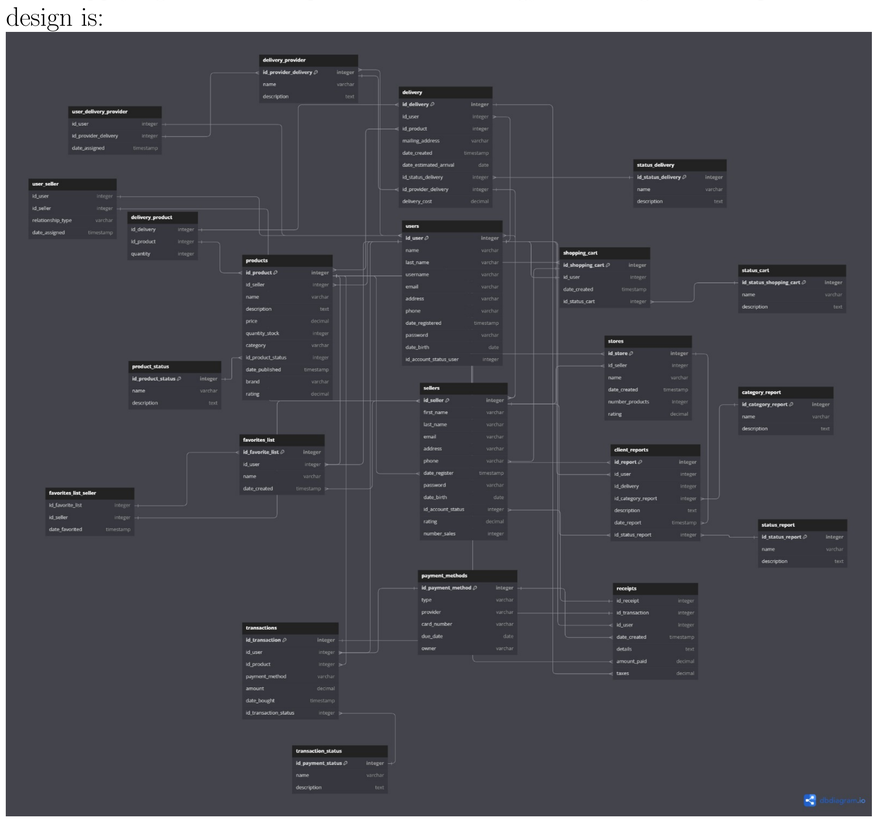


Data Structure, Properties and Constrains

Also is important to apply some restriction to our entities in general, defining the Data Structure for attributes with properties and Constrains. In this case

Final Results Model

After Applying all the 10 steps of the methodology and using all the required information, the MER design is:



Conclusion

In summary, the database design for Mercado Libre was based on a careful collection of user stories, which allowed for the definition of shopping cart functionalities and the creation of custom stores. Establishing a MER design that was the basis for a smooth e-commerce application.