Retail Store Database Schema

This document outlines the relational database schema for a typical retail store. The design uses standard MySQL data types and establishes relationships between tables using primary and foreign keys.

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1. Schema Diagram

(A simplified text-based representation of the table relationship

```
+----------------+          +------------------+
|   Customers    |          |      Orders      |            +----------+
|----------------          |------------------|            |   users  |
| customer_id (PK)|<-+---| order_id (PK)    |            |----------|
| first_name     |  |   | customer_id (FK) |            | username |
| last_name      |  |   | payment_method   |------------| password |
| email          |  |   | order_date       |            | email(PK)|
| reg_date       |  |   | total_amount     |            | role     |
+----------------+  |   |                  |            +----------+
                    |   +------------------+
                    |        |
                    |        |
                    |   +------------------+
                    '-->|   Order_Items    |
                        |------------------|
                        | order_item_id(PK)|
                        | order_id (FK)    |
                        | product_id (FK)  |
                        | quantity         |
                        | price_per_unit   |
                        +------------------+
                             |
                             ||
+----------------+       +------------------+
|   Categories   |       |     Products     |
|---------------|       |------------------|
| category_id(PK)|<-+----| product_id (PK)  |
| category_name  |  |   | product_name     |
+----------------+  |   | category_id (FK) |
                    |   | description      |
                    |   | price            |
                    |   | stock_quantity   |
                    |   | date_added       |
                    '--+------------------+
```

2. Table Definitions

Customers

Stores information about the people who purchase products.

Column Name	Data Type	Constraints/Notes
customer_id	INT	PRIMARY KEY, AUTO_INCREMENT
first_name	VARCHAR(50)	NOT NULL
last_name	VARCHAR(50)	NOT NULL
email	VARCHAR(100)	UNIQUE, NOT NULL
registration_date	DATETIME	DEFAULT CURRENT_TIMESTAMP

Products

Contains details for each product available for sale.

Column Name	Data Type	Constraints/Notes
product_id	INT	PRIMARY KEY, AUTO_INCREMENT
product_name	VARCHAR(100)	NOT NULL
description	TEXT	
price	DECIMAL(10, 2)	NOT NULL, CHECK (price >= 0)
stock_quantity	INT	NOT NULL, DEFAULT 0
category_id	INT	FOREIGN KEY to Categories
date_added	DATETIME	DEFAULT CURRENT_TIMESTAMP

Categories

Used to group products.

Column Name	Data Type	Constraints/Notes
category_id	INT	PRIMARY KEY, AUTO_INCREMENT
category_name	VARCHAR(100)	NOT NULL, UNIQUE
description	TEXT	

Orders

The head of a sales transaction, linking a customer to an order.

Column Name	Data Type	Constraints/Notes
order_id	INT	PRIMARY KEY, AUTO_INCREMENT
customer_id	INT	FOREIGN KEY to Customers
order_date	DATETIME	NOT NULL, DEFAULT CURRENT_TIMESTAMP
total_amount	DECIMAL(10, 2)	NOT NULL
payment_method	ENUM('Cash', 'Credit Card', 'Online')	

Order_Items

A junction table that connects Orders and Products. Each row is one product within an order.

Column Name	Data Type	Constraints/Notes
order_item_id	INT	PRIMARY KEY, AUTO_INCREMENT
order_id	INT	FOREIGN KEY to Orders
product_id	INT	FOREIGN KEY to Products
quantity	INT	NOT NULL, CHECK (quantity > 0)
price_per_unit	DECIMAL(10, 2)	NOT NULL (Price at time of sale)

Users

An Auth table for user login

Column Name	Data Type	Constraints/Notes
username	VARCHAR(20)	NOT NULL
password	VARCHAR(256)	NOT NULL
email	varchar(100)	PRIMARY KEY
role	varchar(20)	DEFAULT 'user'