HW3 - ER Models

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GitHub Repository

👉 AdvancedDatabaseHW3 Repository

Introduction

This document presents an analysis of the `shopping_trends.csv` dataset to extract relevant entities, attributes, and their relationships. The goal is to prepare a structured dataset suitable for database design by identifying primary keys, foreign keys, and composite keys. Additionally, we will represent the extracted schema using Crow's Foot Notation in an ER Model.

Identified Entities and Attributes

1. Customer

- CustomerID (Primary Key)
- Age
- Gender
- Subscription Status

2. Product

- ItemPurchased (Primary Key)
- Category
- Size
- Color
- Season
- Review Rating

3. Purchase

- CustomerID (Foreign Key)
- ItemPurchased (Foreign Key)
- PurchaseAmountUSD

- Location
- PaymentMethod
- ShippingType
- DiscountApplied
- PromoCodeUsed

4. PaymentMethod

- PaymentMethod (Primary Key)

5. Frequency

- FrequencyOfPurchases (Primary Key)
- PreviousPurchases

Identifying Relationships

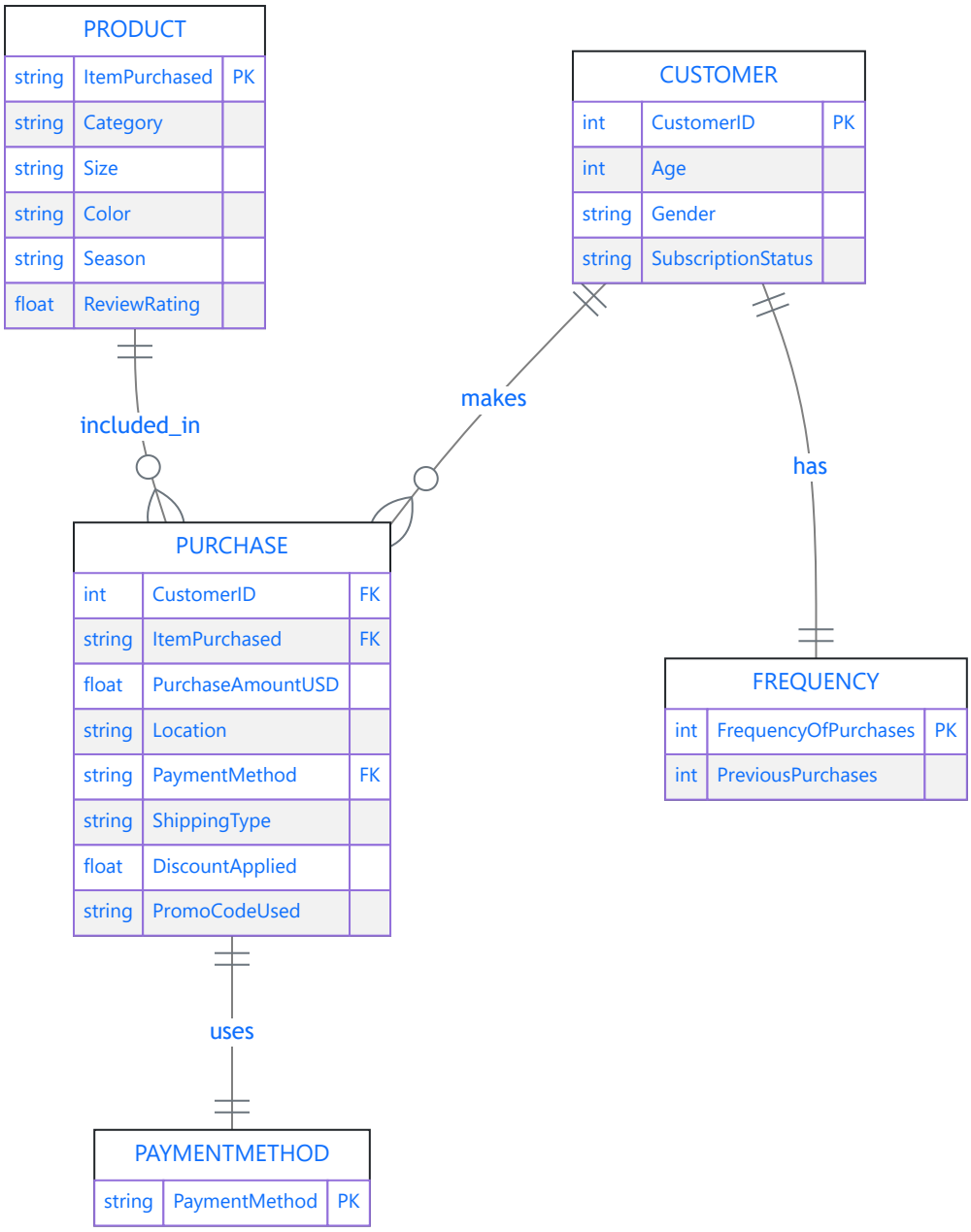
- **A Customer can make multiple Purchases** (1:M)
- **A Product can be part of multiple Purchases** (1:M)
- **A Purchase uses one Payment Method** (1:1)
- **A Customer has one Frequency** (1:1)

Identifying Keys

- **Primary Keys:**
  - CustomerID (Customer)
  - ItemPurchased (Product)
  - (CustomerID, ItemPurchased) as Composite Key for Purchase
  - PaymentMethod (PaymentMethod)
  - FrequencyOfPurchases (Frequency)
- **Foreign Keys:**
  - CustomerID → Purchase
  - ItemPurchased → Purchase

Crow's Foot Notation ER Model

The ER Model using Crow's Foot Notation:



Conclusion

This document provides an entity-relationship model for the given dataset, outlining the database structure required for implementation. The Crow's Foot notation diagram visually represents entity relationships, ensuring a normalized design suitable for efficient querying and data management.