User Requirements:

A User can: Own multiple products (many-to-many relationship).

Have exactly one payment card (one-to-one relationship).

Attributes:

Username: Required, max length 100 characters.

Email: Required, must be a valid email format.

Password: Required, minimum 6 characters.

Product Requirements:

A Product can:

Belong to multiple users (many-to-many relationship).

Belong to one category (many-to-one relationship).

Attributes:

Name: Required, max length 150 characters.

Price: Required, must be between 0.01 and 10,000.

Description: Optional, max length 500 characters.

Category Requirements:

A Category can:

Have multiple products (one-to-many relationship).

Attributes:

Name: Required, max length 100 characters.

PaymentCard Requirements:

A PaymentCard:

Belongs to exactly one user (one-to-one relationship).

Attributes:

CardNumber: Required, must be a valid credit card format.

CardHolderName: Required, max length 50 characters.

ExpiryYear: Required, must be a valid year (e.g., between 2024 and 2100).

Relationship Summary:

Many-to-Many (User ↔ Product):

Users can own multiple products.

Products can belong to multiple users.

Use a join table (UserProduct) to implement this relationship.

Many-to-One (Product ↔ Category):

A product belongs to one category.

A category can have multiple products.

One-to-One (User ↔ PaymentCard):

Each user has exactly one payment card.

A payment card is associated with one user.