Supplements Store - Requirements & Development Plan

1. Project Overview Build a web and mobile application for a supplements store that enables users to browse products, make online payments, and track their orders. Admins can manage products, orders, and inventory.

Requirements of Different Roles:

1. Users

- The system shall allow users to register with a name, email, and password.
- Each user must have a role assigned (CUSTOMER or ADMIN)
- Login functionality should validate credentials securely.
- Admins can access customer data for management.
- Users should be able to update profile information.
- Every user will have a creation timestamp for audit tracking.

2. Products

- Admins can create and manage product listings.
- Each product must include name, description, and category.
- Products are linked to one or more variants (flavor, size).
- Products should be searchable by category or keyword.
- Each product record should log its creation time
- Deleting a product should also remove its variants.

3. Product Variants

- Variants are specific versions of a product (e.g., 500g Mango).
- Each variant must include flavor, weight, price, and stock.
- An image URL can be linked for product display.
- Variants must reference a parent product.
- Stock should be updated automatically after purchases.
- Admins can add, update, or delete variants.

4. Cart Items

- Customers can add multiple items (variants) to the cart.
- Quantity should be selectable and validated against stock.
- Each cart item links a user to a product variant.
- Users can update or remove items before checkout.
- Carts are user-specific and cleared after order placement.
- A timestamp records when items are added to the cart.

5. Orders

- Customers can place orders for the items in their cart.
- Each order records the total amount, delivery address, and status.
- Payment status should be tracked (PENDING, PAID, FAILED).

- Order status must reflect delivery stages (PROCESSING, SHIPPED, DELIVERED).
- Order data includes a creation timestamp.
- Orders are associated with the user who placed them.

6. Order Items

- Each order contains multiple order items.
- Each order item links to a specific product variant.
- Quantity and price are recorded per item.
- These records support invoice generation and stock management.
- Deleting an order should cascade delete its items.

Noun's in Different Roles:

1. Users

- system, name, email, password
- role
- login, credentials
- management
- profile information
- timestamp, audit tracking

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2. Products

- listings
- description, category
- variants, flavor, size
- keyword
- record

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3. Product Variants

- versions
- weight, price, stock
- image URL, display
- parent product
- purchases

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4. Cart Items

- items, cart
- quantity
- checkout

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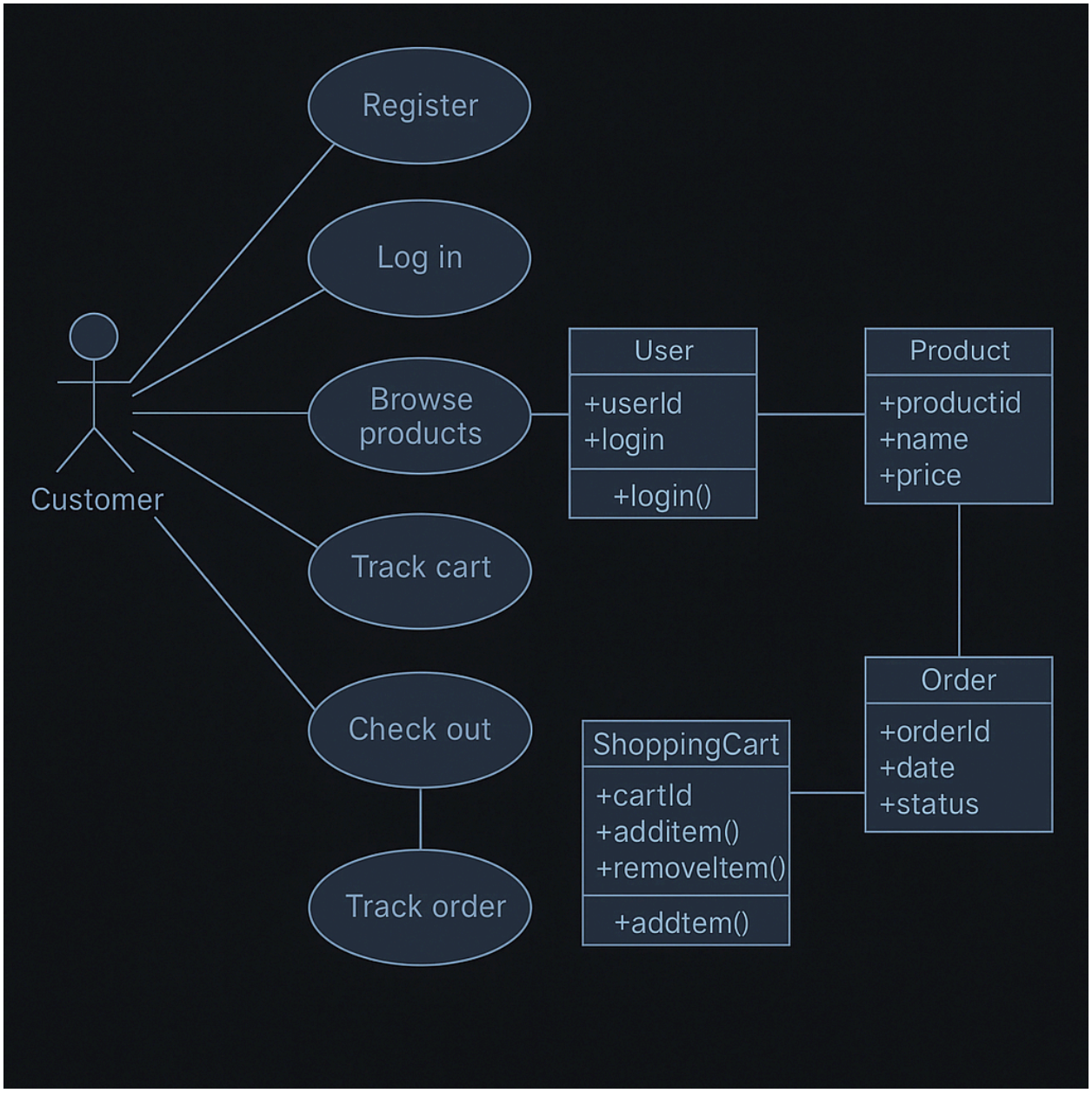
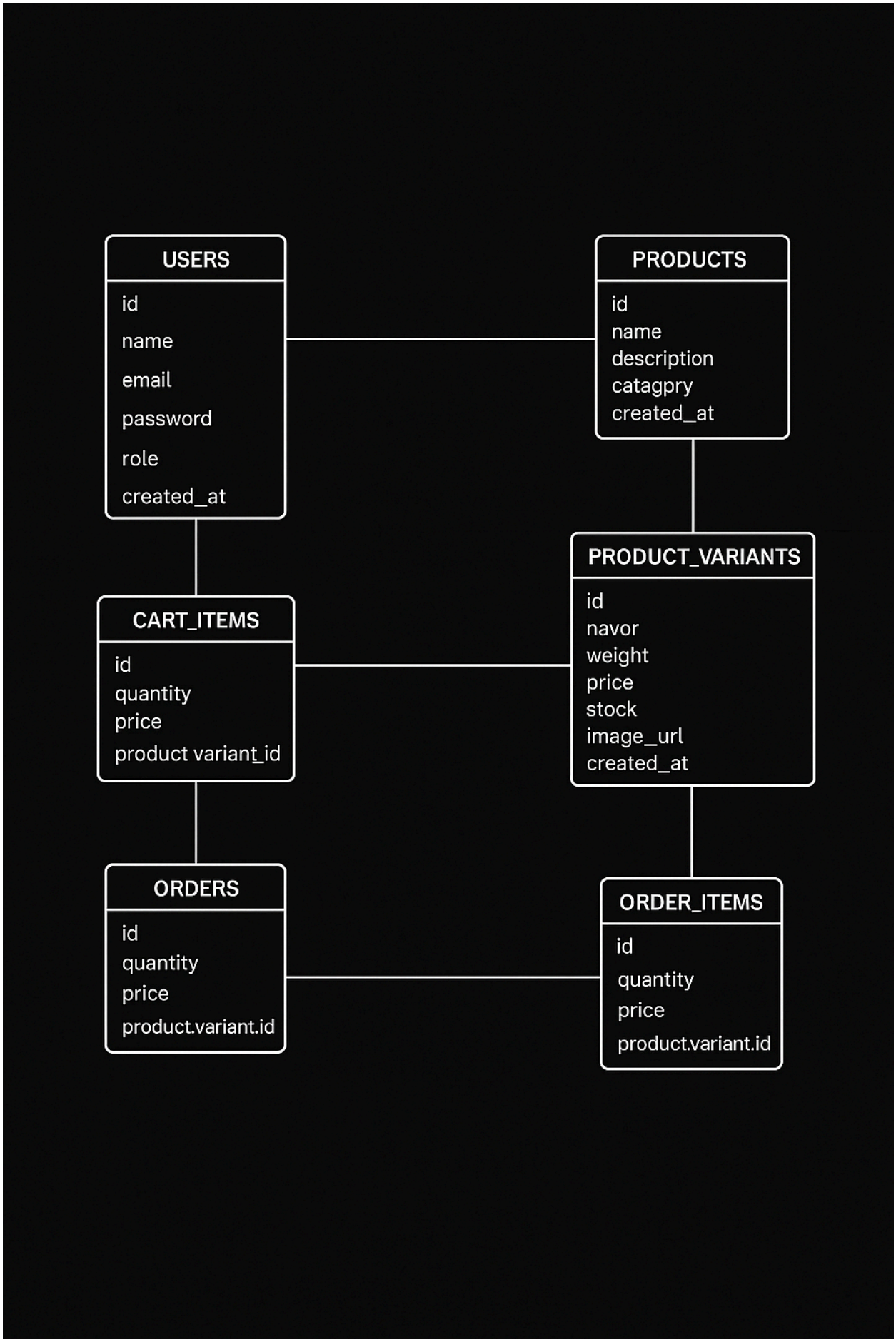
5. Orders

- total amount, delivery address, status
- payment status
- delivery stages



Use Case Diagram


USERS
id
name
email
password
role
created_at
PRODUCTS
id
name
description
catagpry
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PRODUCT_VARIANTS
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weight
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CART_ITEMS
id
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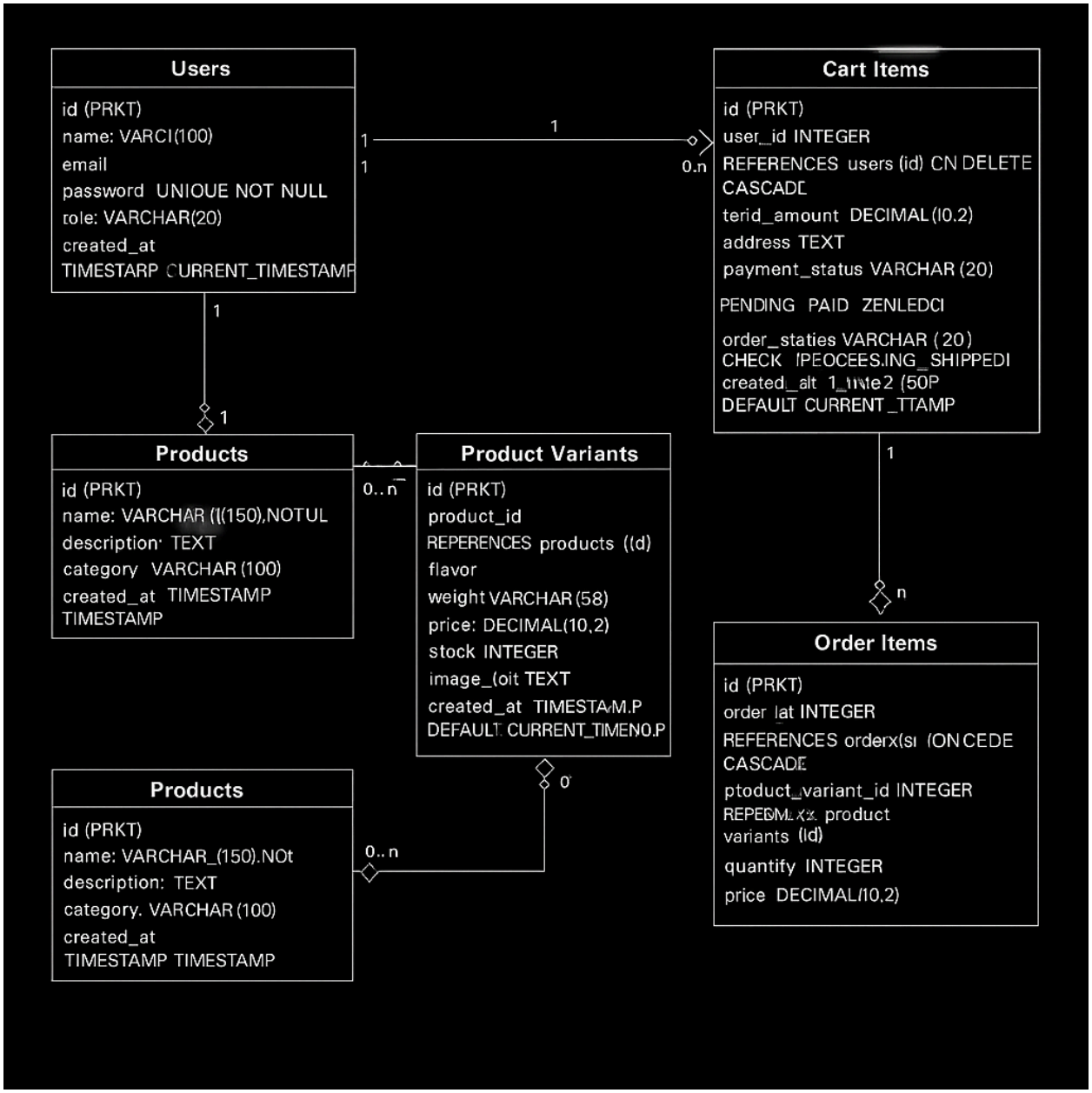
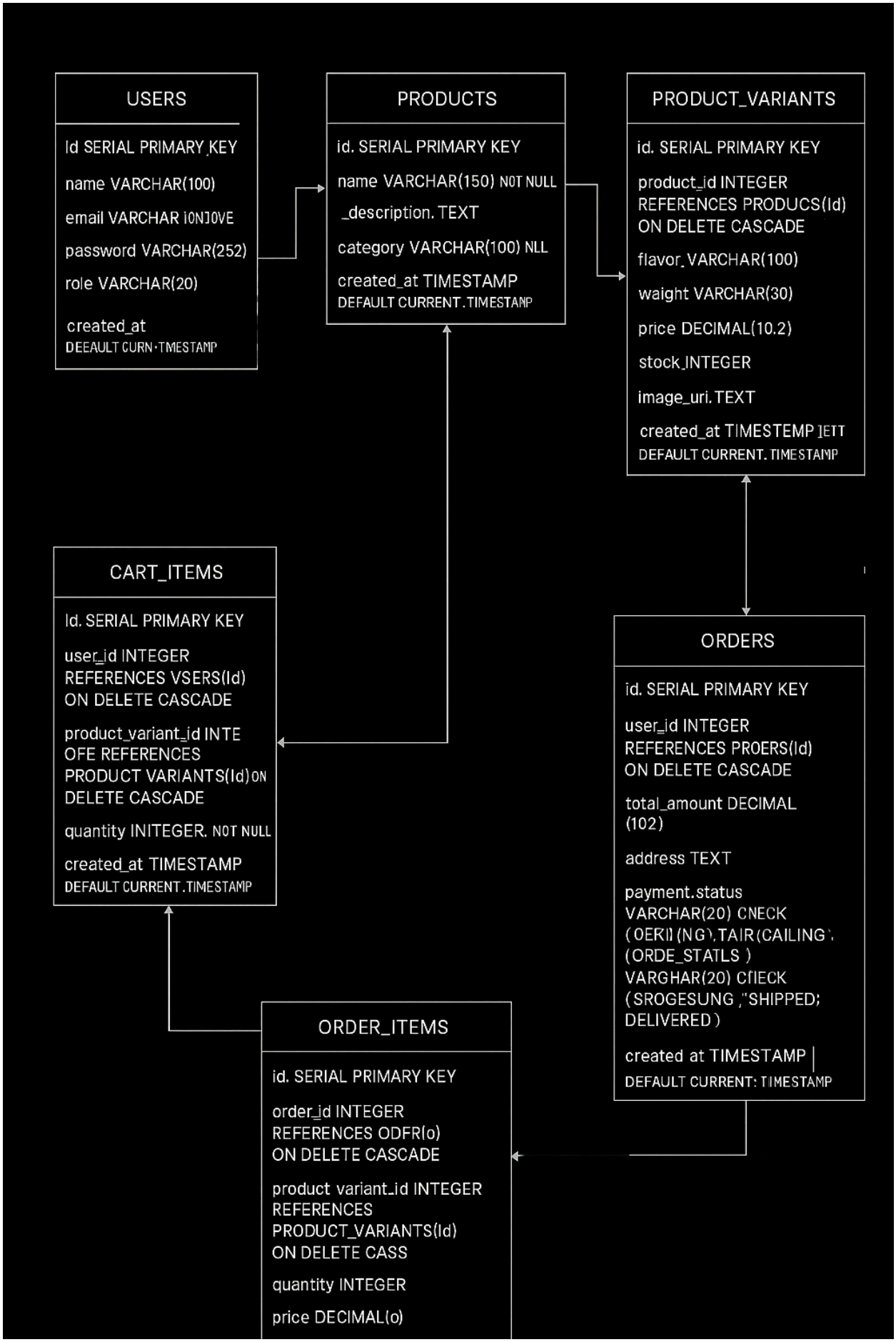
ORDERS
id
quantity
price
product.variant.id
ORDER_ITEMS
id
quantity
price
product.variant.id

Class Diagram



ER Diagram


USERS
Id SERIAL PRIMARY KEY
name VARCHAR(100)
email VARCHAR iONIOVE
password VARCHAR(252)
role VARCHAR(20)
created_at
DEEAULT CURN·TMESTAMP
PRODUCTS
id. SERIAL PRIMARY KEY
name VARCHAR(150) NOT NULL
_description. TEXT
category VARCHAR(100) NLL
created_at TIMESTAMP
DEFAULT CURRENT.TIMESTANP
PRODUCT_VARIANTS
id. SERIAL PRIMARY KEY
product_id INTEGER
REFERENCES PRODUCS(Id)
ON DELETE CASCADE
flavor_VARCHAR(100)
waight VARCHAR(30)
price DECIMAL(10.2)
stock_INTEGER
image_uri. TEXT
created_at TIMESTEMP]ETT
DEFAULT CURRENT. TIMESTAMP
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user_id INTEGER
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ON DELETE CASCADE
product_variant_id INTE
OFE REFERENCES
PRODUCT VARIANTS(Id) ON
DELETE CASCADE
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created_at TIMESTAMP
DEFAULT CURRENT.TIMESTAMP
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user_id INTEGER
REFERENCES PROERS(Id)
ON DELETE CASCADE
total_amount DECIMAL
(102)
address TEXT
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(ORDE_STATLS)
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created at TIMESTAMP
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ORDER_ITEMS
id. SERIAL PRIMARY KEY
order_id INTEGER
REFERENCES ODFR(o)
ON DELETE CASCADE
product variant_id INTEGER
REFERENCES
PRODUCT_VARIANTS(Id)
ON DELETE CASS
quantity INTEGER
price DECIMAL(o)

Updated Git Project Links:

https://github.com/venkatSridarala/Spring-By-Tech-M