E-Commerce Backend

Built with Spring Boot, Thymeleaf, and PostgreSQL

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Objective

Build a functional E-commerce platform with Spring Boot

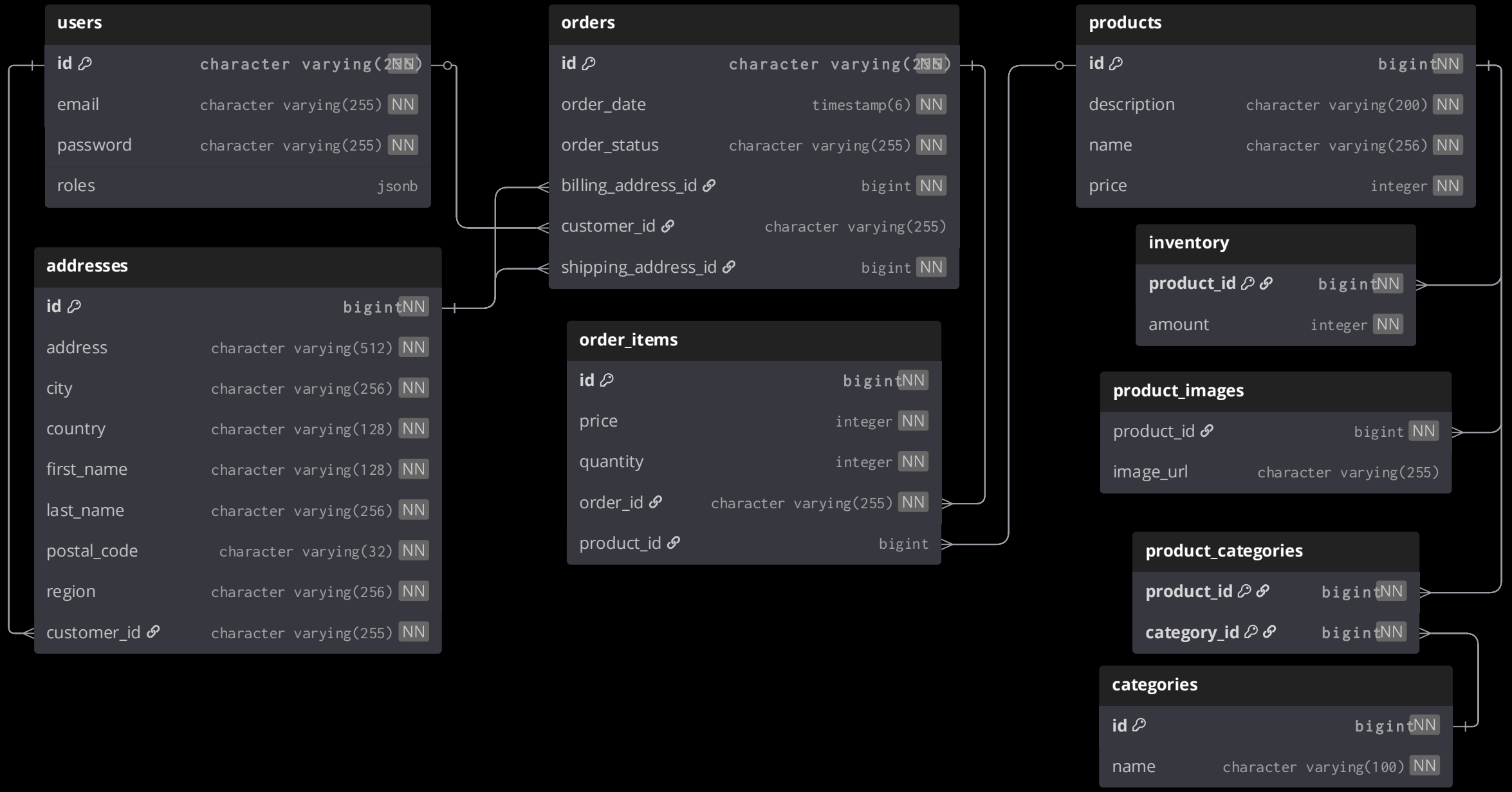
- Entities:
  - Products
  - Categories
  - Orders
  - Order items
  - Customers
  - Inventory
  - Addresses
- Features:
  - Product catalog
  - Shopping cart management
  - Order processing
  - Inventory tracking
  - Customer profiles
  - Multiple Addresses

Other goals

Learning

- Authentication with Spring Security
- Learning by practice
- Focus on backend
- No JavaScript
- MVC pattern

Database architecture

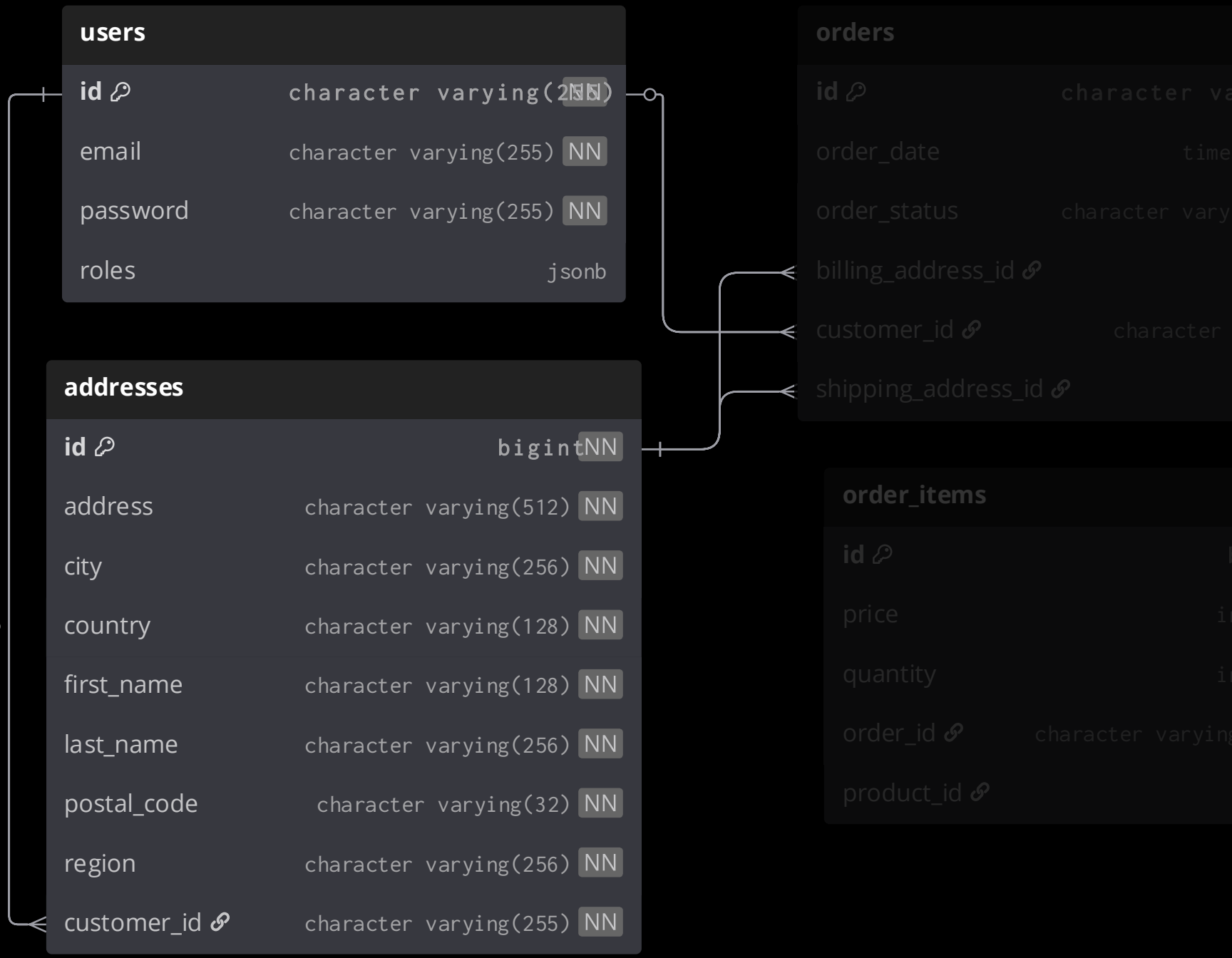


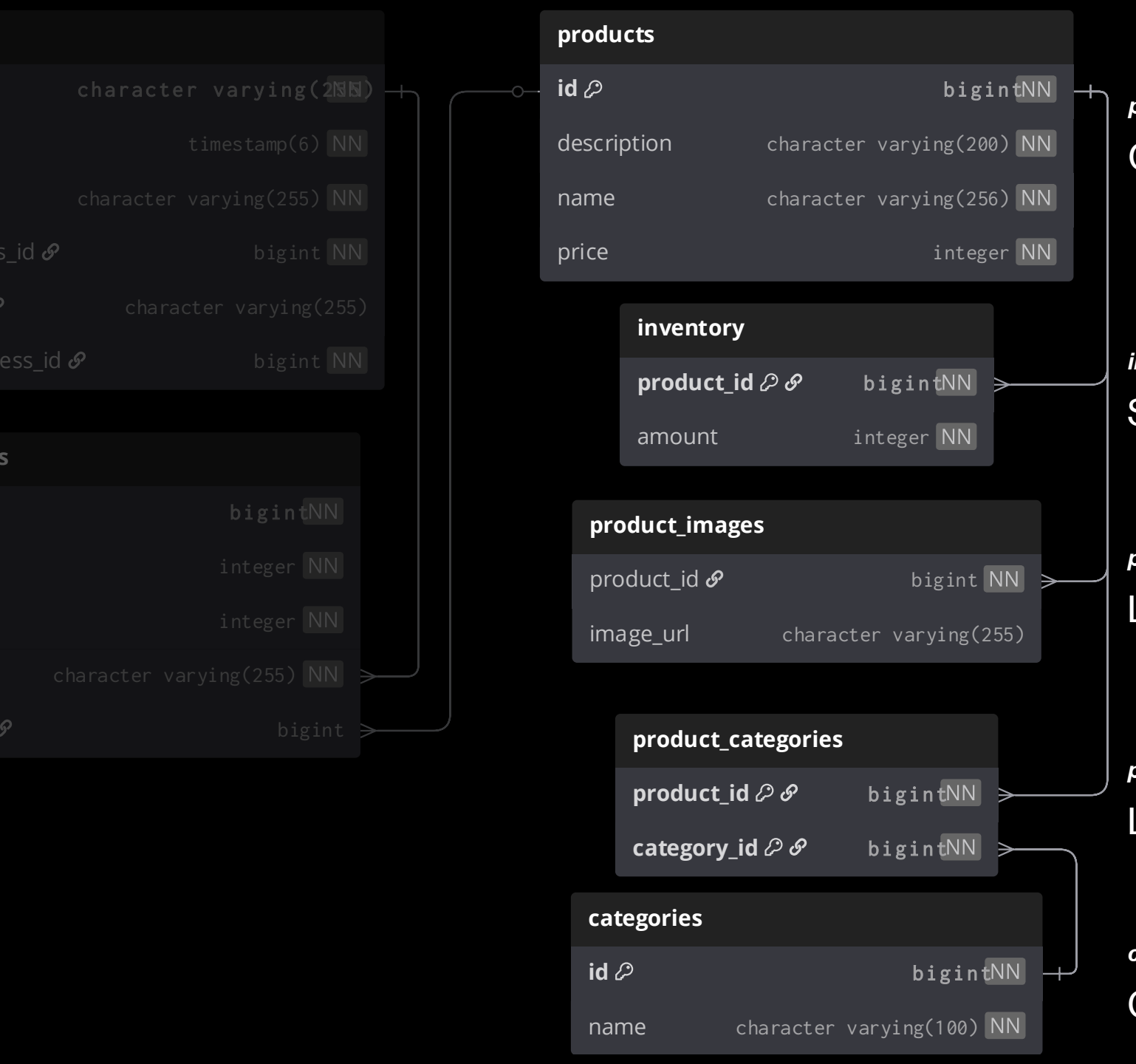
users

Login credentials and roles

addresses

Stored shipping & billing locations





products

Core attributes and pricing

inventory

Stock availability

product_images

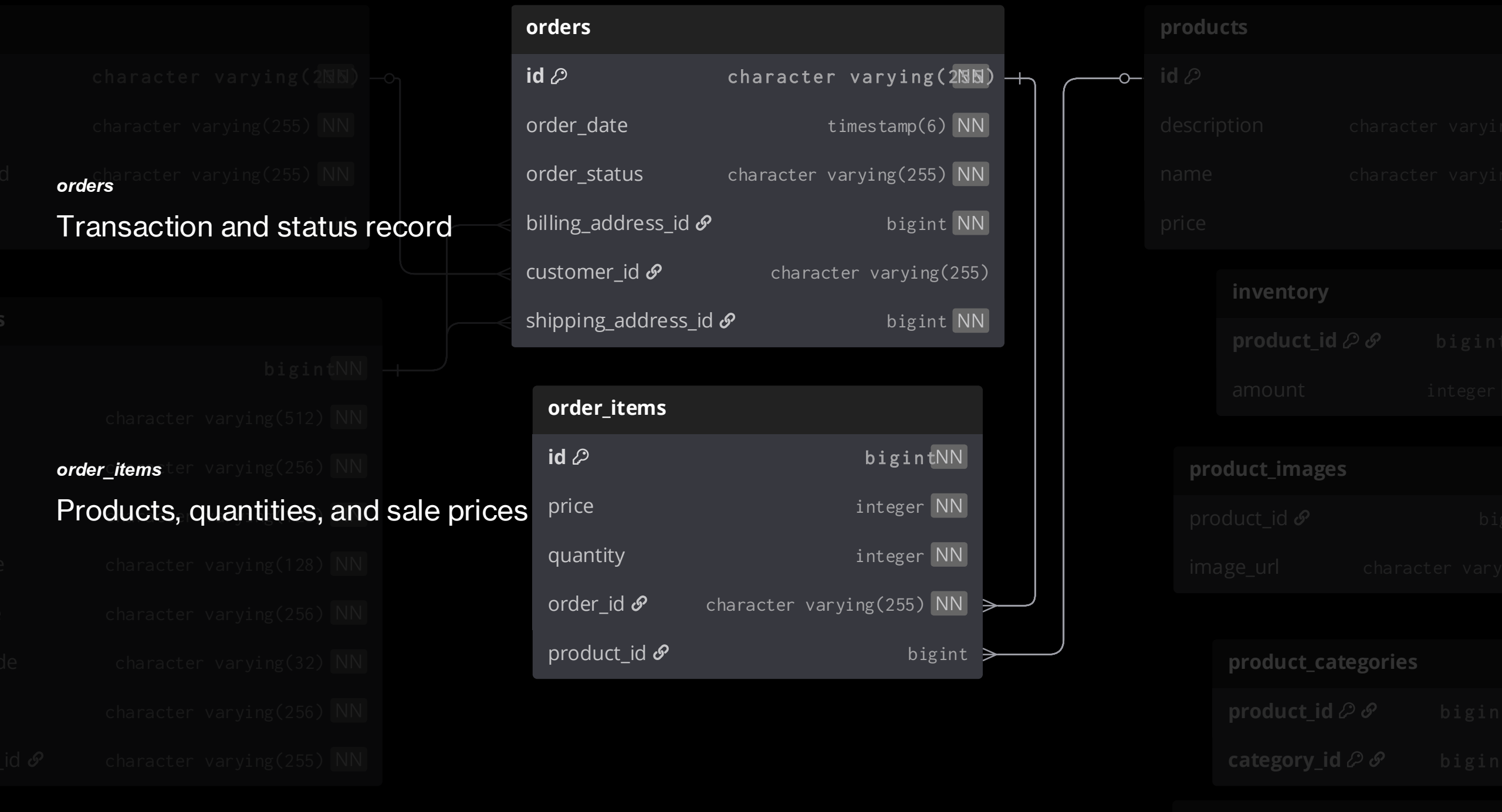
Links to product photos

product_categories

Links items to multiple groups

categories

Grouping of products

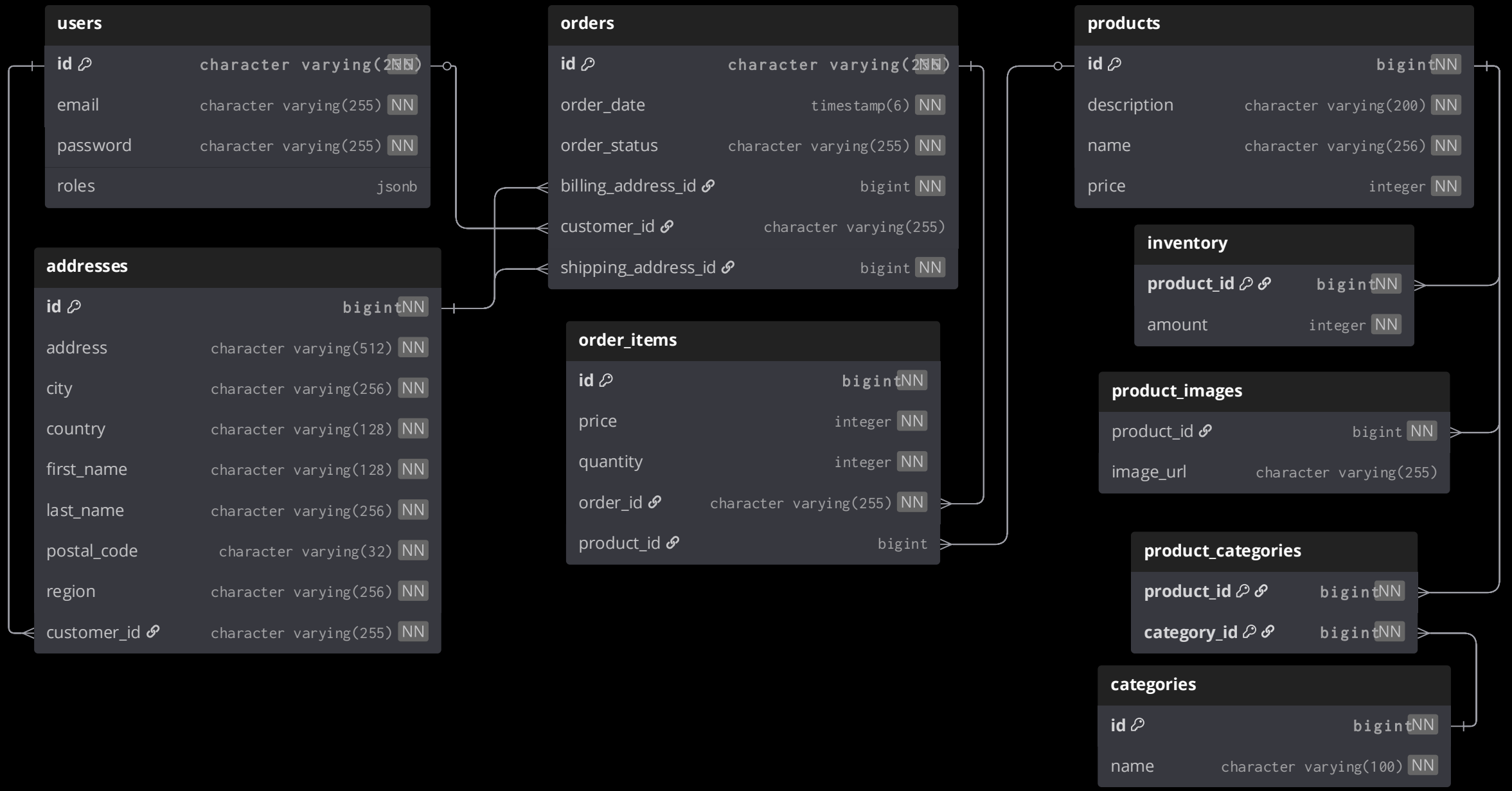


orders

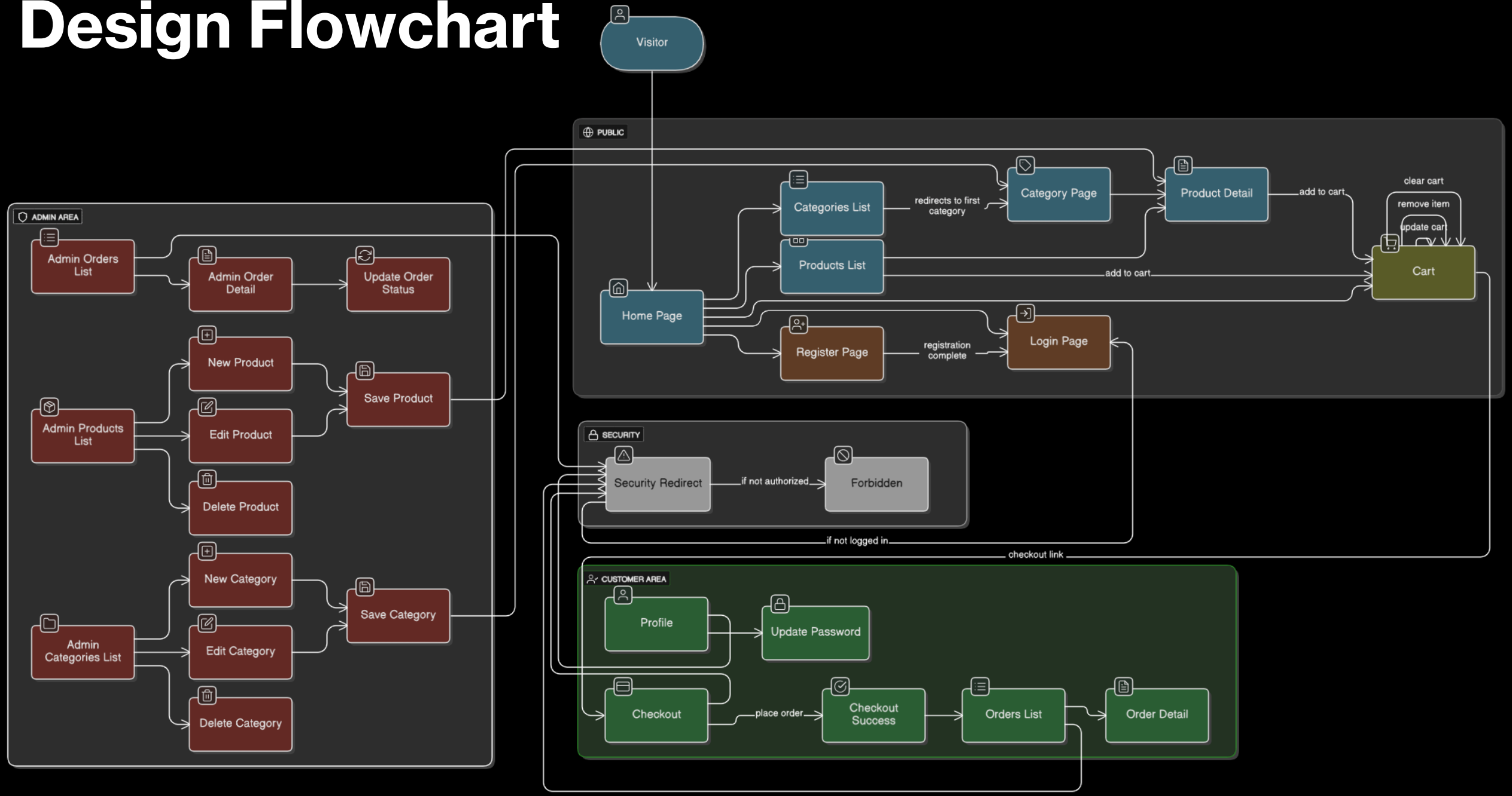
Transaction and status record

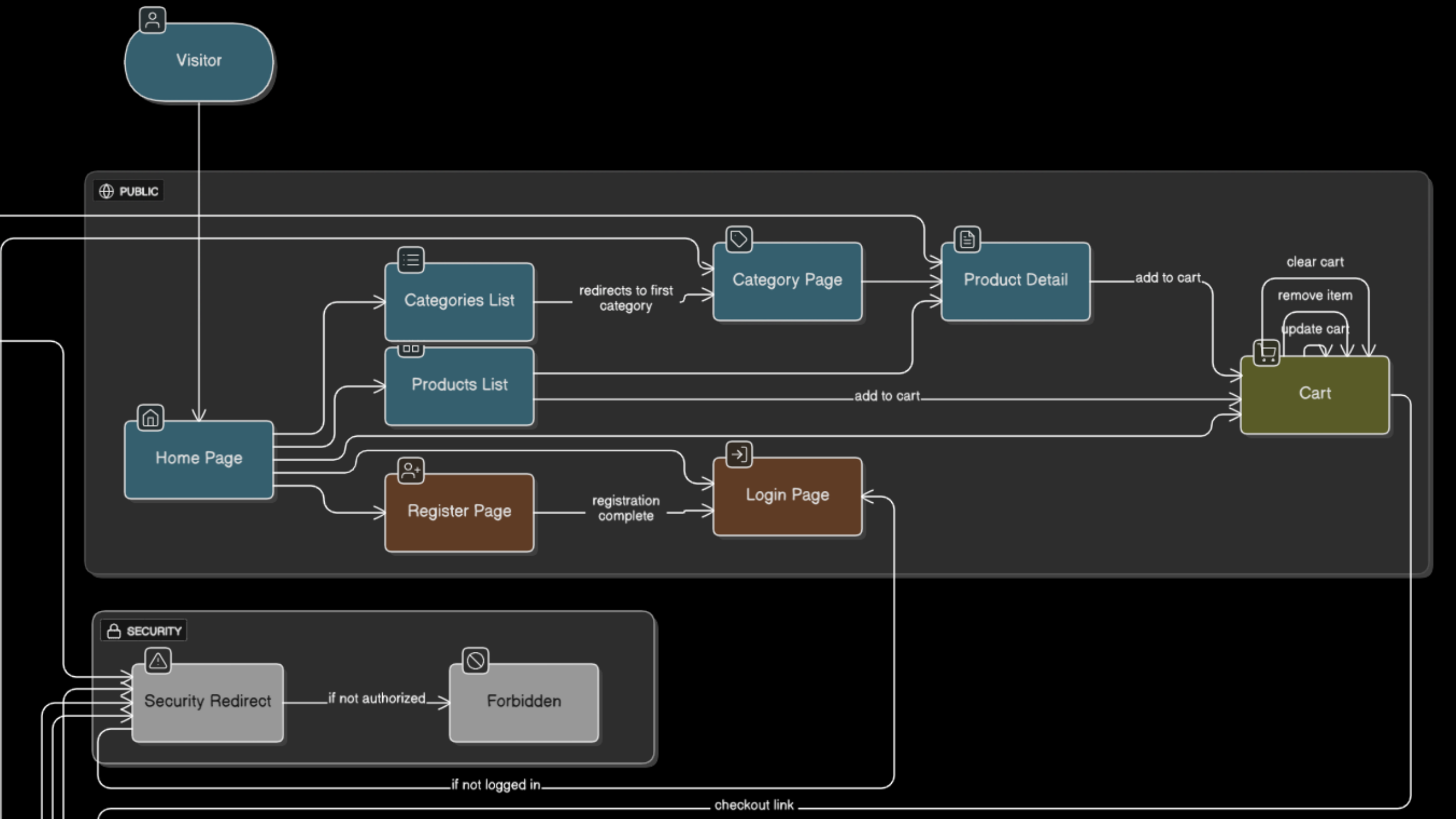
order_items

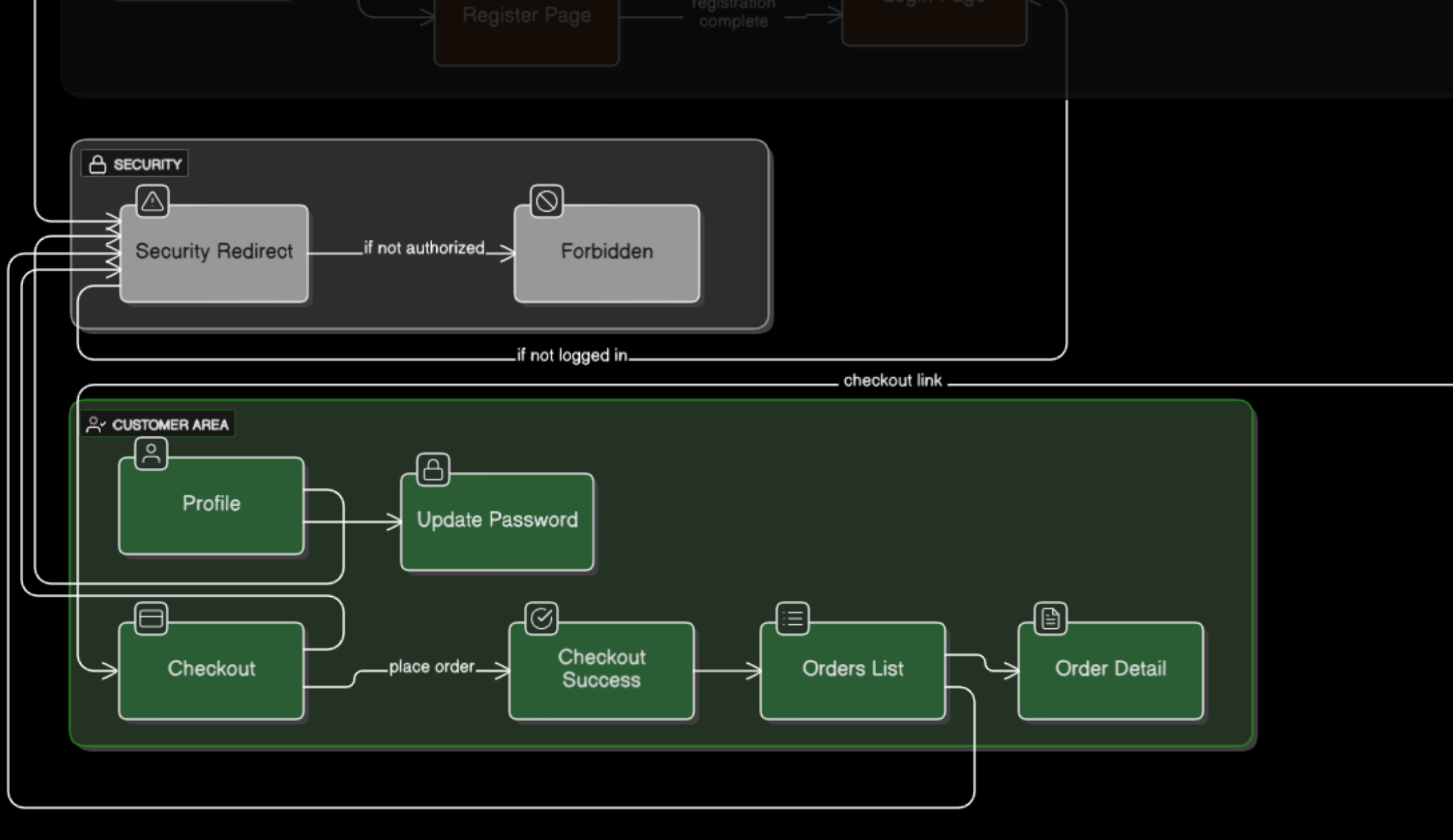
Products, quantities, and sale prices

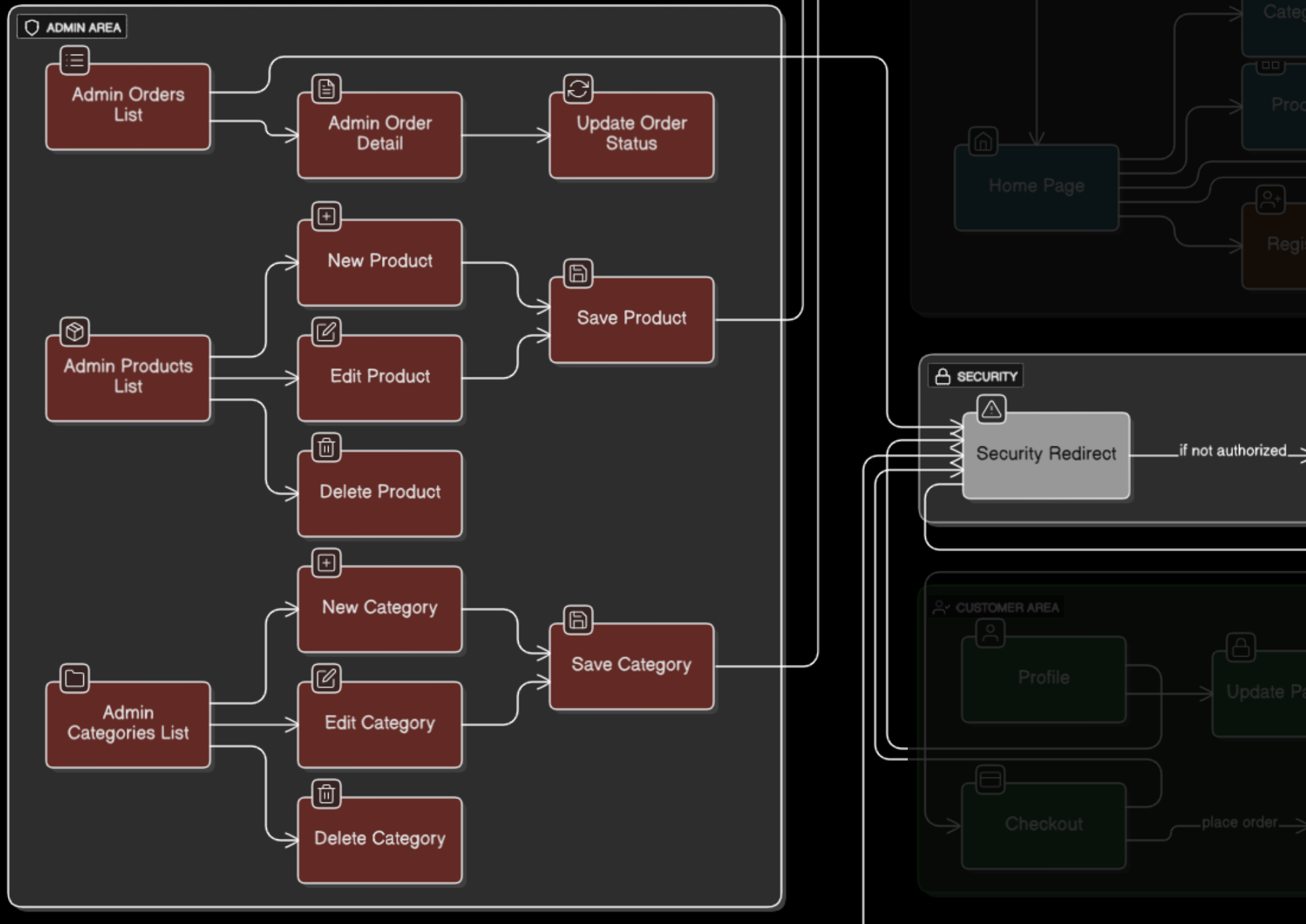

users
id character varying(255) NN
email character varying(255) NN
password character varying(255) NN
roles jsonb
addresses
id bigint NN
address character varying(512) NN
city character varying(256) NN
country character varying(128) NN
first_name character varying(128) NN
last_name character varying(256) NN
postal_code character varying(32) NN
region character varying(256) NN
customer_id character varying(255) NN
orders
id character varying(255) NN
order_date timestamp(6) NN
order_status character varying(255) NN
billing_address_id bigint NN
customer_id character varying(255)
shipping_address_id bigint NN
order_items
id bigint NN
price integer NN
quantity integer NN
order_id character varying(255) NN
product_id bigint
products
id bigint NN
description character varying(200) NN
name character varying(256) NN
price integer NN
inventory
product_id bigint NN
amount integer NN
product_images
product_id bigint NN
image_url character varying(255)
product_categories
product_id bigint NN
category_id bigint NN
categories
id bigint NN
name character varying(100) NN
User "stack"
Order "stack"
Product "stack"

Design Flowchart

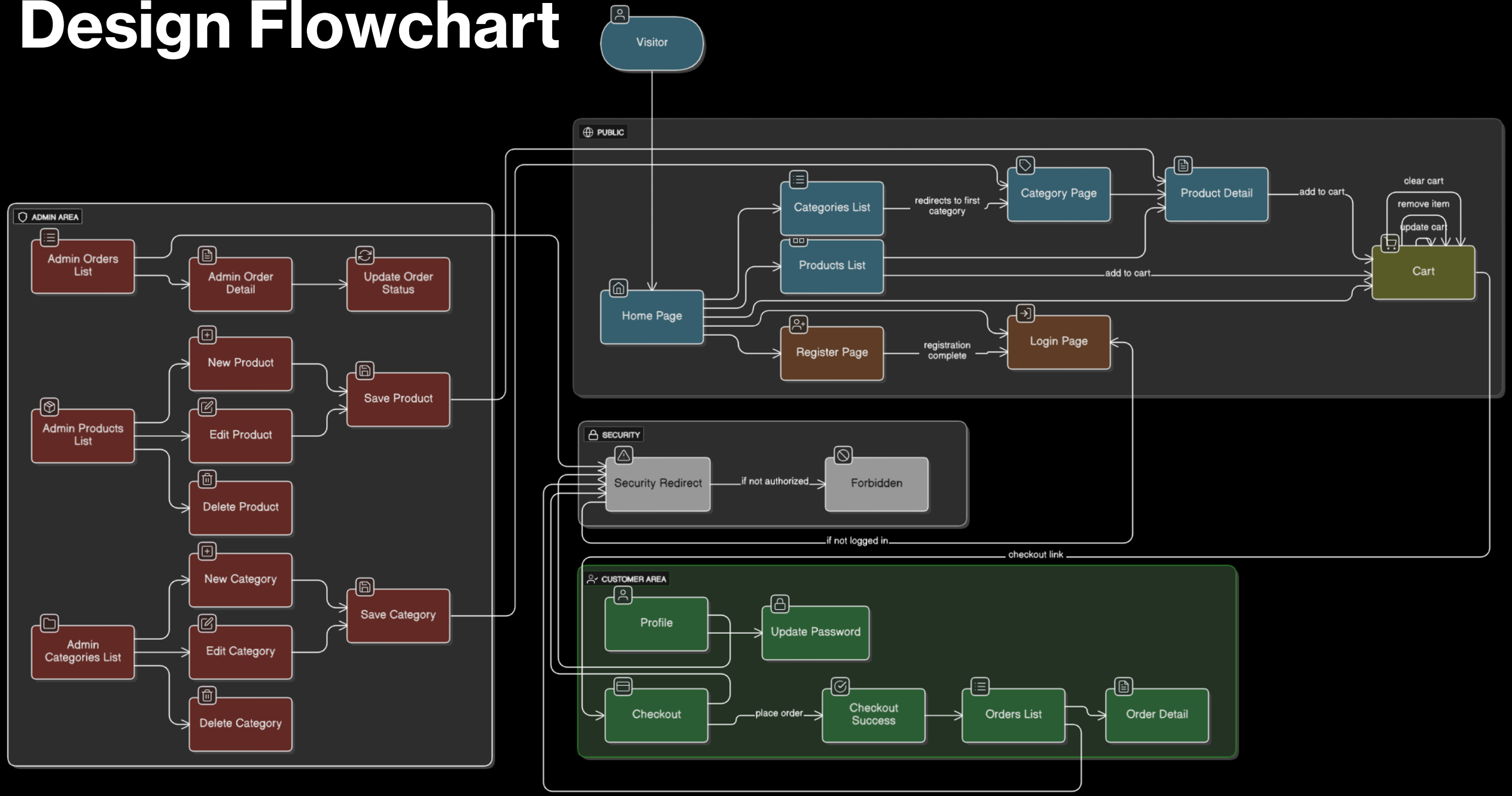



Visitor
PUBLIC
Categories List
redirects to first category
Category Page
Product Detail
add to cart
clear cart
remove item
update cart
Products List
add to cart
Cart
Home Page
Register Page
registration complete
Login Page
SECURITY
Security Redirect
if not authorized
Forbidden
if not logged in
checkout link


Register Page
registration complete
SECURITY
Security Redirect
if not authorized
Forbidden
if not logged in
checkout link
CUSTOMER AREA
Profile
Update Password
Checkout
place order
Checkout Success
Orders List
Order Detail

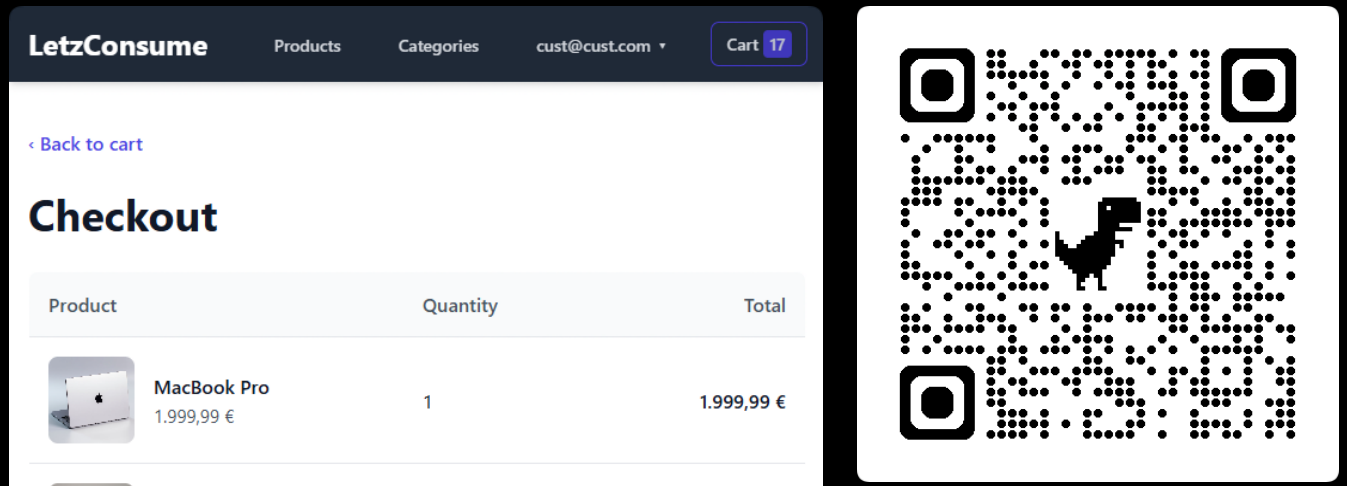

ADMIN AREA
Admin Orders List
Admin Order Detail
Update Order Status
Admin Products List
New Product
Edit Product
Delete Product
Save Product
Admin Categories List
New Category
Edit Category
Delete Category
Save Category
Home Page
SECURITY
Security Redirect
if not authorized
CUSTOMER AREA
Profile
Checkout
place order

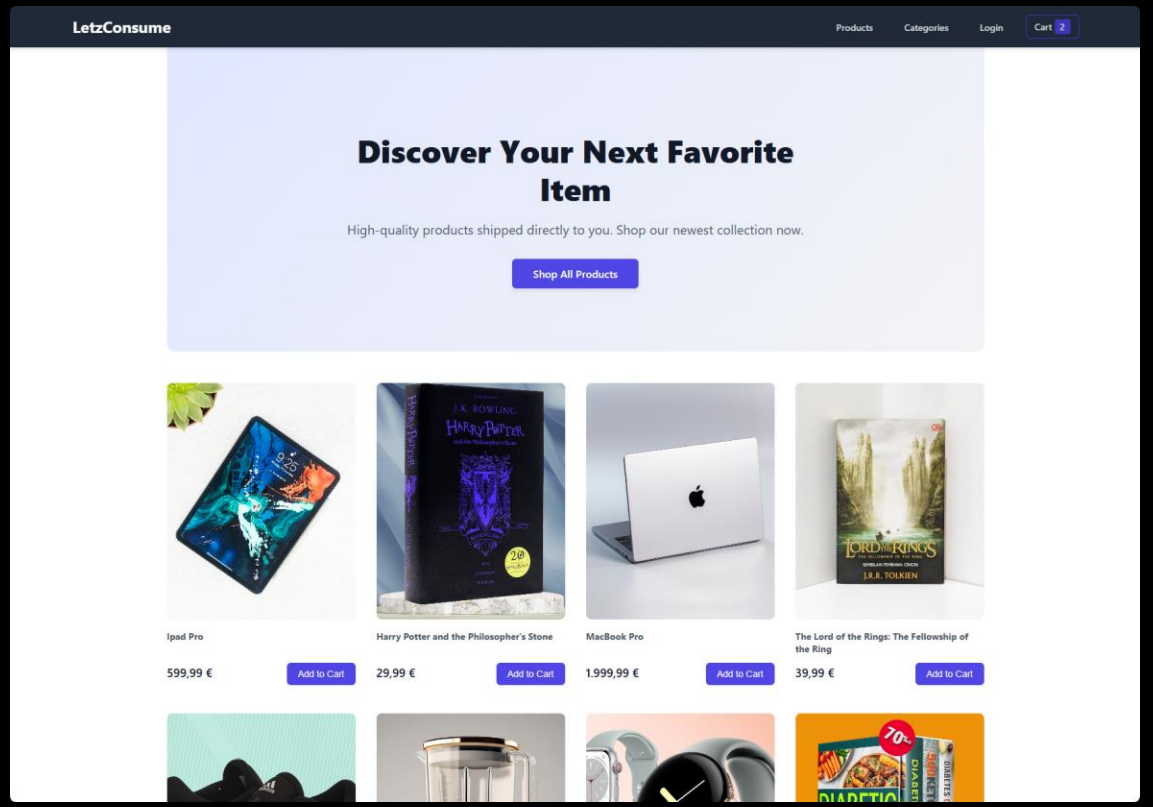
Design Flowchart

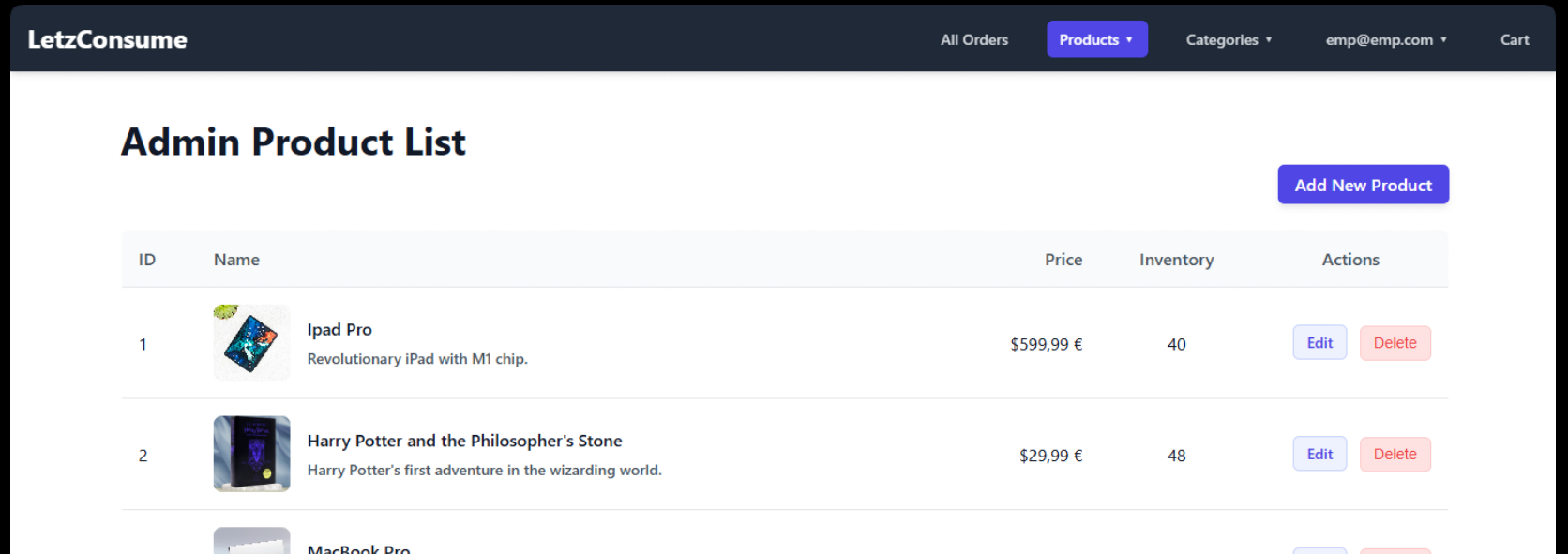


Live Demo

cnfpc1.fakedevs.com







What I Learned

- Thymeleaf
  - Fragments/Layouts
  - Reusable UI
  - Global model attributes
- Spring Security
  - Protected pages
  - Session-based
- JPA-based database design
  - Entities and relationships with JPA
  - Persistent data modeling
- Spring fundamentals
  - Dependency Injection / Beans
  - Common annotations
  - Model-View-Controller pattern
- Practiced self-learning
  - Reading Errors/Stack-Traces
  - Googling/reading docs/tutorials
  - Integrating features

Questions?

Thanks