

Smart Billing System for Shops: Team [Code Beans]

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Project Overview: Smart Billing System

Problem

Inefficient manual billing slows shop processes.

Solution

Automated billing system built with Java for ease.

Key Features

- Product management
- Billing & payment processing
- Reporting and authentication

Benefits

Faster transactions, fewer errors, better inventory control.



Core Java OOP Concepts Implemented

Encapsulation

Combines data attributes and methods in objects.

Product Class Example

Attributes: price, quantity; Method: calculateTotal()

Inheritance

Extend classes to create new types with added features.

DiscountedProduct

Child class with discount logic built on Product class.



OOP Concepts Continued: Abstraction & Polymorphism

Abstraction

Hides complex processes behind simple interfaces.

Example: Billing hides internal calculations from users.

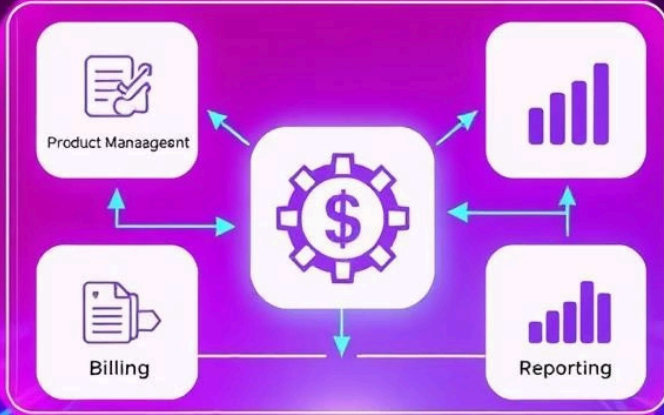
Polymorphism

Unified interface for multiple payment types.

Example: Payment interface used by Cash and Card payments.

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System Architecture & Modules



- Modular Design**
Ensures easy maintenance and scalability.
- Product Management**
Add, edit, delete products efficiently.
- Billing Module**
Invoice generation and payment processing.
- Reporting Module**
Generate sales and inventory reports.

Database Design & Implementation

Database

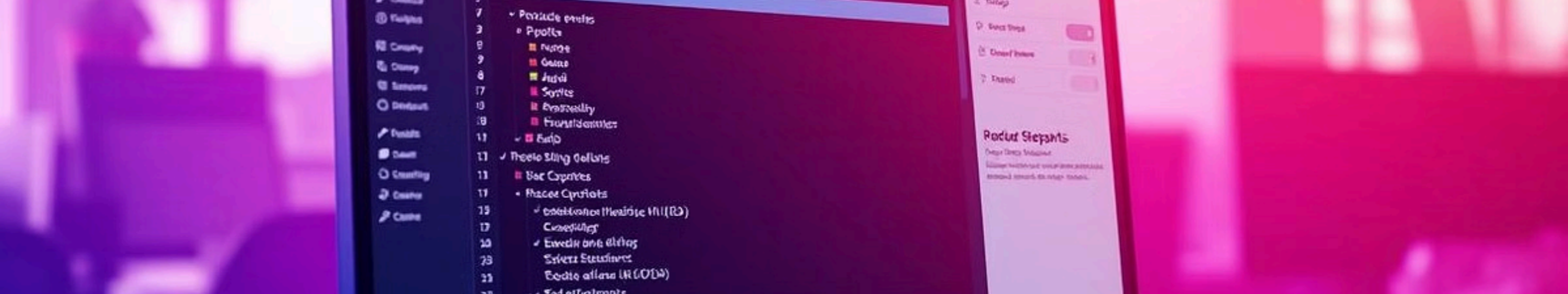
MySQL/PostgreSQL stores product and transaction data.

Data Tables

- Products
- Customers
- Transactions
- Users

Sample Queries

Retrieve and update product, sales information fast.



User Interface & Functionality



User Roles

Admin with full access,
Cashier with limited
rights.



GUI

Built using
Swing/JavaFX for a
user-friendly
experience.



Key Screens

Displays product list,
billing, and reporting
forms.



Demo Preview

Live demonstration of
main system features.

Conclusion & Future Enhancements



Summary

Smart billing system implemented successfully.



Benefits

Improves efficiency and reduces billing errors.



Future Plans

- Online ordering feature
- Loyalty programs integration
- Mobile app development

