

# Design Patterns — Complete Learning Roadmap

Goal: Apply design patterns confidently in real-world projects and interviews.

## Learning Order & Focus

- 1 Foundations — SOLID principles, code smells, refactoring moves
- 2 Behavioral (Core): Strategy, Template Method, Command, Observer
- 3 Structural: Adapter, Facade, Decorator, Composite, Proxy
- 4 Creational: Factory Method, Abstract Factory, Builder, Prototype, Singleton (rare)
- 5 Behavioral (Round 2): State, Chain of Responsibility, Mediator, Memento, Iterator, Visitor

## Core Exercises

- 1 Foundations: Refactor Fever, Name It Right
- 2 Strategy: Discount Engine, Formatter Swap
- 3 Template Method: File Importers
- 4 Command: Undoable Text Editor
- 5 Observer: Notification Hub
- 6 Adapter & Facade: Payment Adapter, API Facade
- 7 Decorator & Composite: Pricing Decorators, Menu Tree
- 8 Creational: Factory, Builder, Abstract Factory Katas
- 9 State & Chain: Ticket Lifecycle, Auth Pipeline

## Project Threads (Apply patterns in context)

- 1 Mini E-commerce: catalog → cart → checkout → payments
- 2 Notification Platform: events, channels, retries
- 3 Plugin-based CLI App: extendable command system

## Interview Prep Habits

- 1 Pattern-to-problem mapping drill: identify and justify patterns
- 2 Whiteboard habit: show context, interfaces, data flow
- 3 Refactor talk-through: safe incremental refactor steps
- 4 Build cheat cards: intent, forces, trade-offs, test hooks

## Notes for Learner

Upload your kata code to GitHub and share links here for feedback. Each review will include code comments, pattern validation, and interview-style questions.

Remember: clarity > cleverness. Progress = fewer conditionals, tighter APIs, cleaner tests.