The Strategy Pattern

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Overview

Classification: Behavioral

Family of algorithms

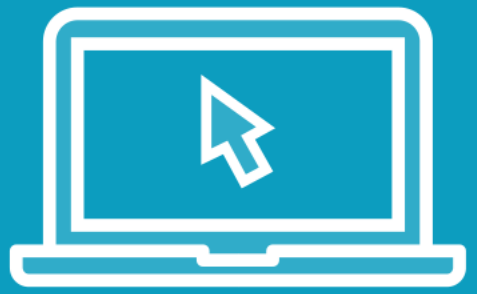
Encapsulate each one

Make them interchangeable

Algorithms vary independently

Also know as the Policy pattern

Demo



Motivating Example:

Shipping cost calculator

Must support:

- Federal Express
- UPS
- Postal Service

Must be extendable (add new shippers)

Problems Discovered

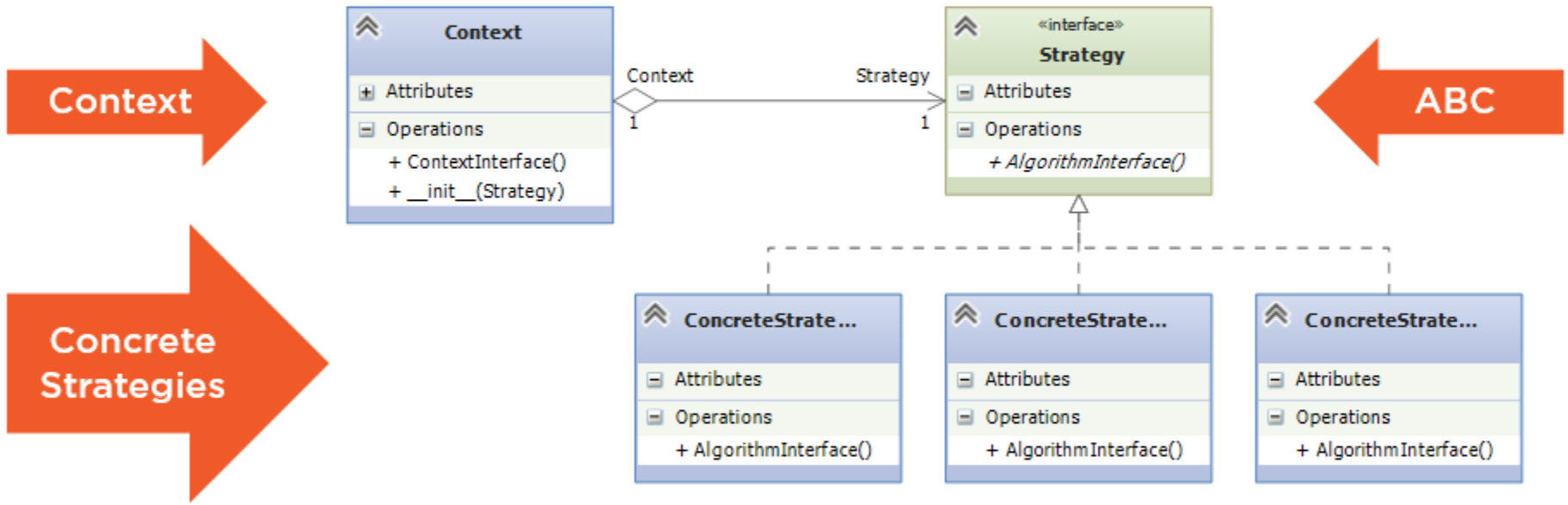
Violates Single Responsibility Principle

Violates Open/Closed Principle

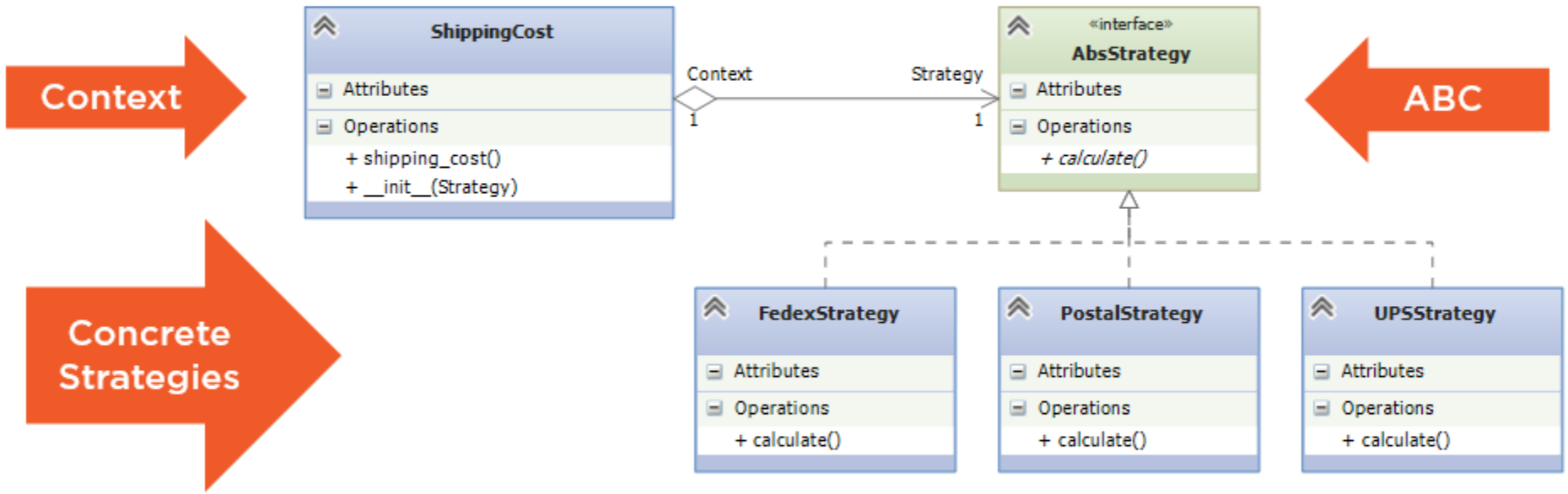
Violates Dependency Inversion Principle

Long list of if/elif clauses

Strategy Pattern Structure



ShippingCost Strategy Structure



Demo

Fix the problems discovered

Remove shipping concerns from orders

Separate the algorithms

Keep the classes closed

Allow for extension

Program to an interface (Python ABC)

What Have We Achieved?

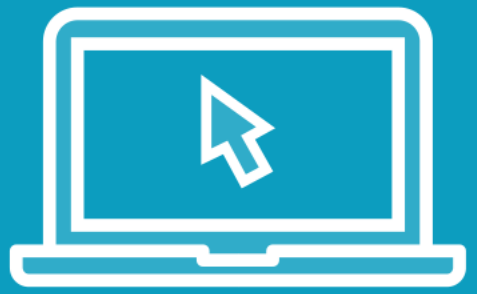
Fixed the problems we discovered

Test algorithms in isolation

Test the outer code with deterministic mock algorithms

No more if/elif/else statement

Demo



Variations:

Strategies as functions

Strategies as lambdas

Summary

Encapsulate algorithms

Several techniques available

Sequences of if/elif are a red flag