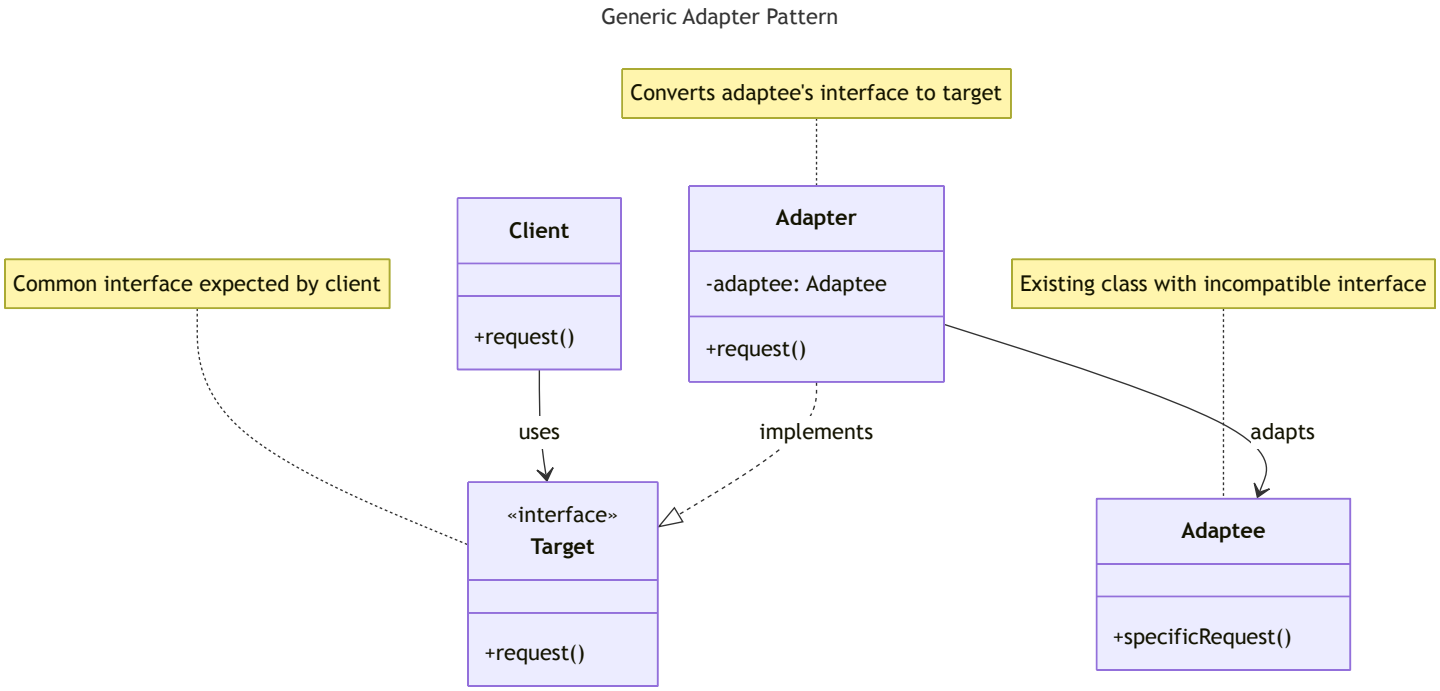
Generic Diagram

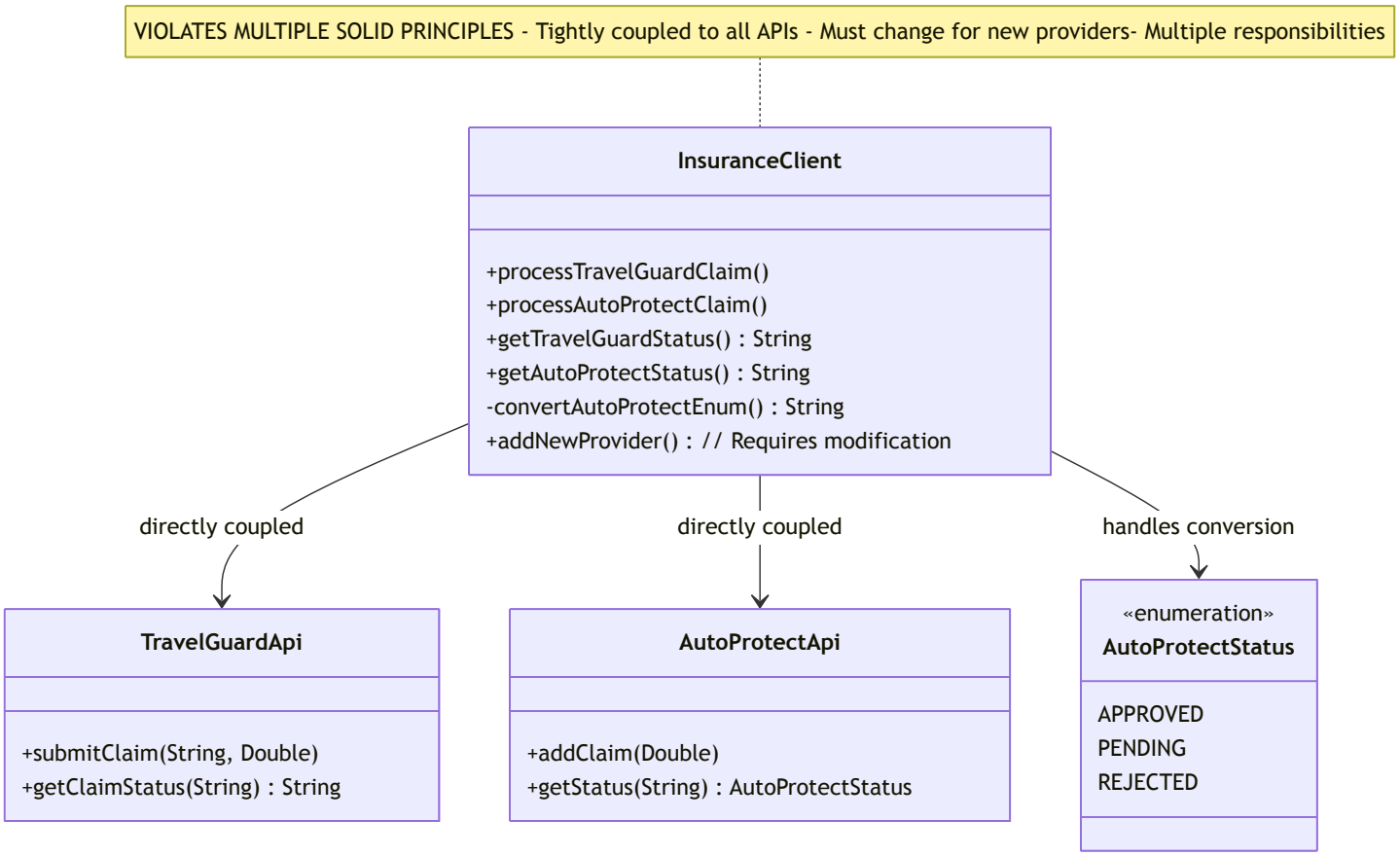


Adapter Pattern for Insurance Providers Integration

Without Adapter Pattern

- Principle of least Knowledge

Without Adapter Pattern (BAD DESIGN)



```
// BAD - Without Adapter Pattern
class InsuranceClient {
    private TravelGuardApi travelGuard = new TravelGuardApi();
    private AutoProtectApi autoProtect = new AutoProtectApi();

    public void submitClaim(String provider, String id, Double amount) {
        if ("TravelGuard".equals(provider)) {
            travelGuard.submitClaim(id, amount);
        } else if ("AutoProtect".equals(provider)) {
            autoProtect.addClaim(amount); // Different method name!
        }
        // Add new provider = modify this method ❌
    }

    public String getStatus(String provider, String id) {
        if ("TravelGuard".equals(provider)) {
            return travelGuard.getClaimStatus(id);
        } else if ("AutoProtect".equals(provider)) {
            return convertEnum(autoProtect.getStatus(id)); // Manual conversion ❌
        }
        return null;
    }
}
```

SOLID Principles Violated Without Adapter Pattern

🔴 Single Responsibility Principle (SRP)

- Client handles business logic + API conversions + provider-specific logic
- One class doing multiple unrelated tasks

🔴 Open/Closed Principle (OCP)

- Must modify client code to add new insurance providers
- Not open for extension, requires modification

🔴 Dependency Inversion Principle (DIP)

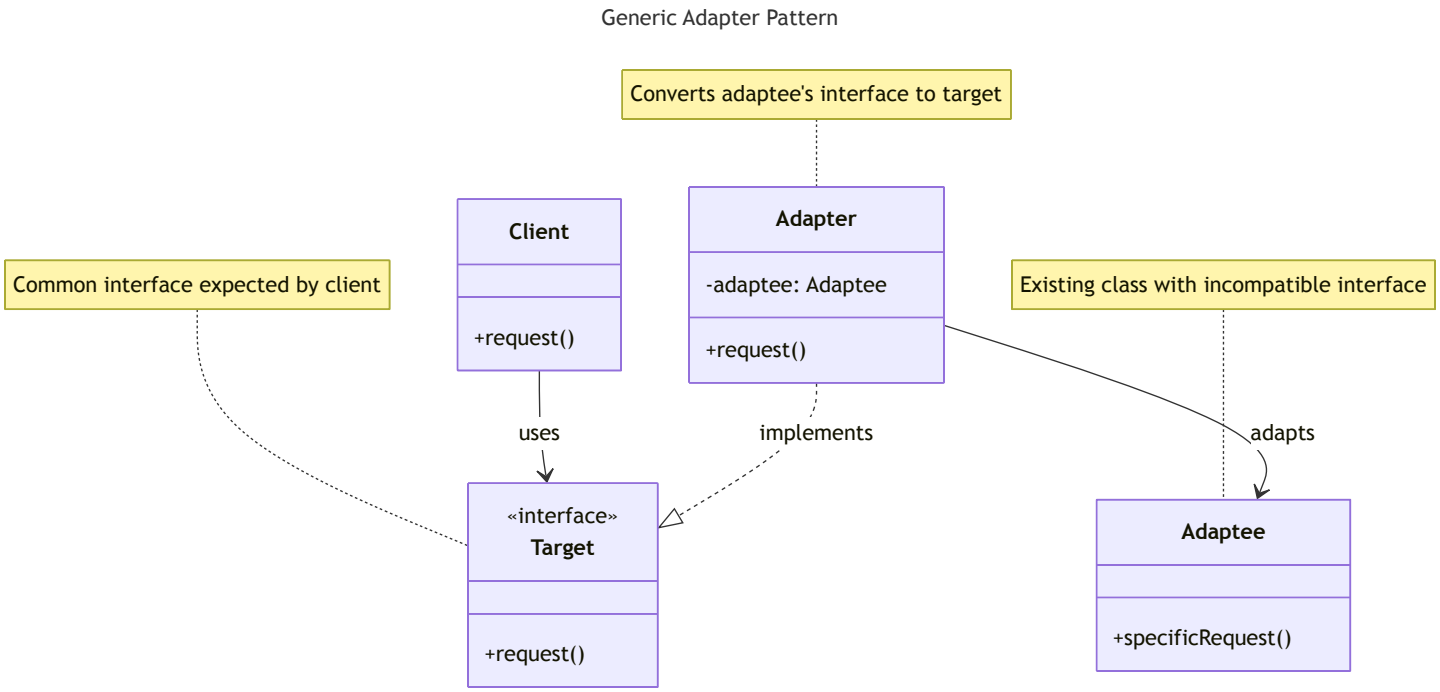
- Client directly depends on concrete API classes
- High-level modules depending on low-level modules

🔴 **Interface Segregation Principle (ISP)**

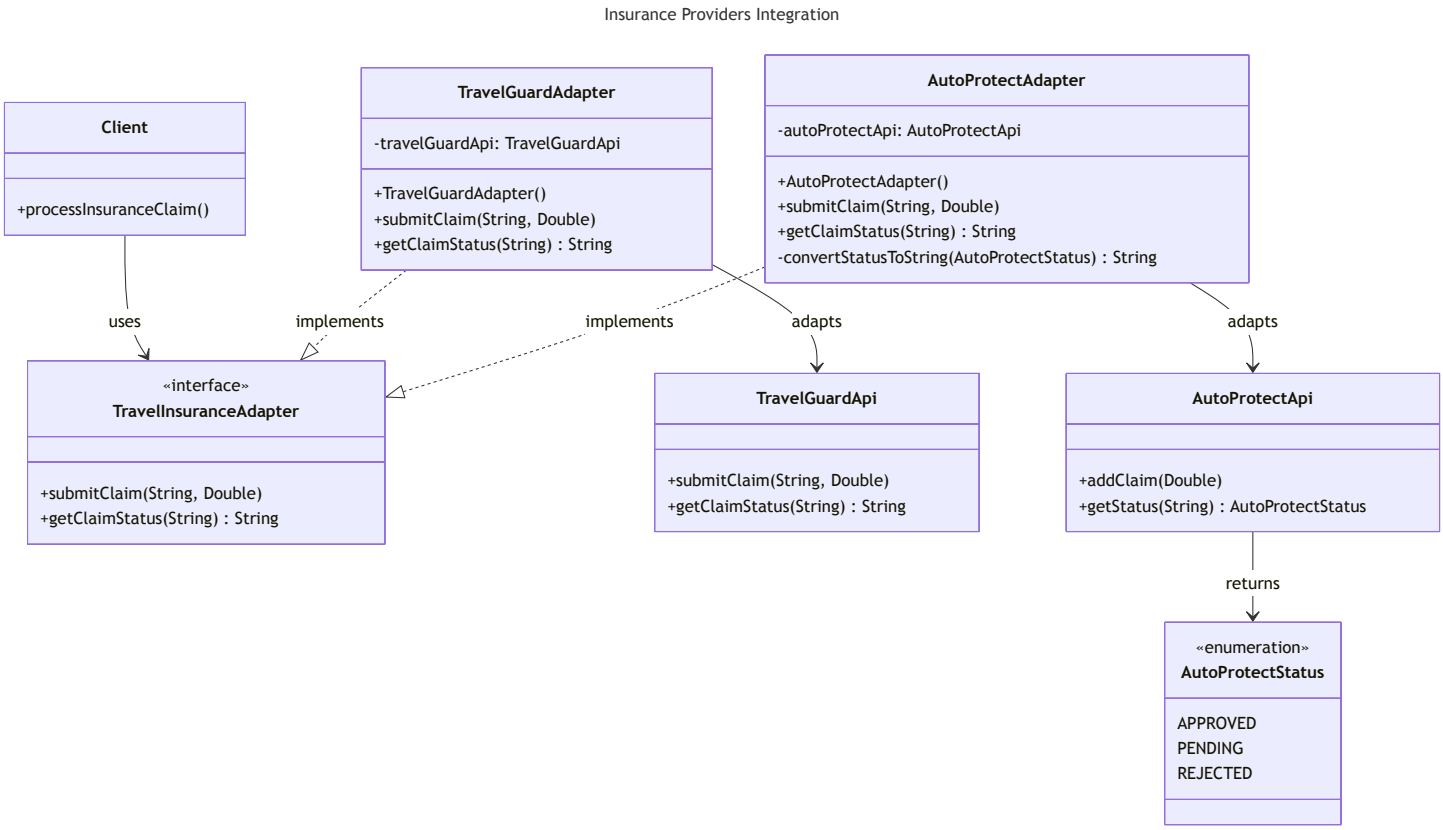
- Client forced to know about all provider-specific methods
- No common interface to work with

With Adapter Pattern

Generic Diagram



Specific Diagram



How Adapter Pattern Helps Here

Key Benefits:

- **Unified Interface**: All insurance providers accessed through same `TravelInsuranceAdapter` interface
- **Easy Integration**: Add new providers without changing existing code
- **API Isolation**: External API changes only affect their specific adapter
- **Data Format Standardization**: Converts different return types (enum → string) to common format
- **Parameter Mapping**: Handles different method signatures seamlessly
- **Maintainability**: Client code remains unchanged when switching providers