Design Patterns

2. Structural Patterns

Structural Patterns

They answer to the question of: **how to build a software component**

- **Adapter**
- **Bridge**
- **Composite**
- **Decorator**
- **Facade**
- **Proxy**

Adapter Pattern

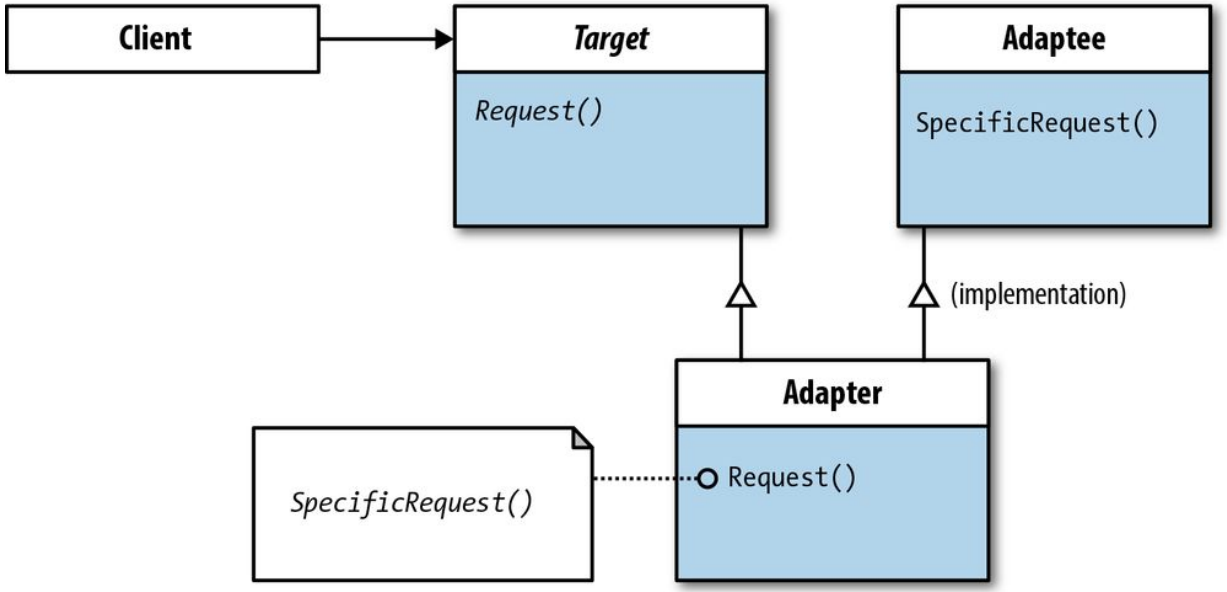
Concept: The adapter pattern allows two components with incompatible APIs to work together by introducing an adapter that maps from one component to the other.

Examples: card reader, power adapter, media player

Code examples:

- https://www.tutorialspoint.com/design_pattern/adapter_pattern.htm
- MapStruct library

Adapter Pattern



Bridge Pattern

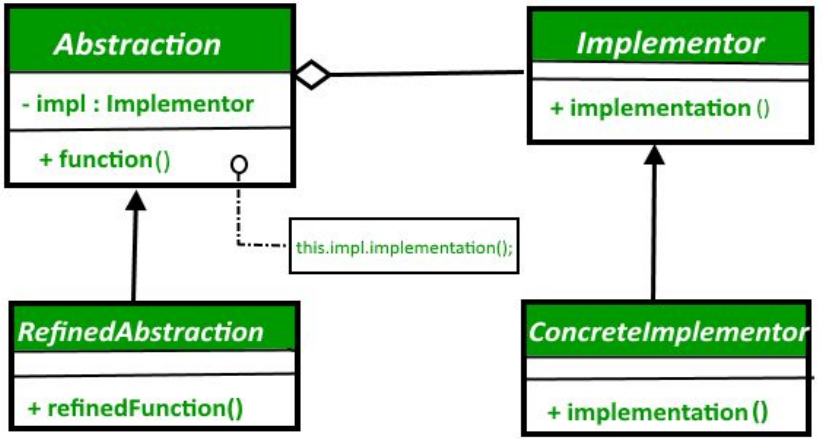
> **“Adapter makes things work after they're designed; Bridge makes them work before they are.”**
> **[GoF, p219]**

Concept: Decouple an abstraction from its implementation so that the two can vary independently. Bridge pattern is about preferring composition over inheritance.

Examples:

- https://www.geeksforgeeks.org/bridge-design-pattern/

Bridge Pattern



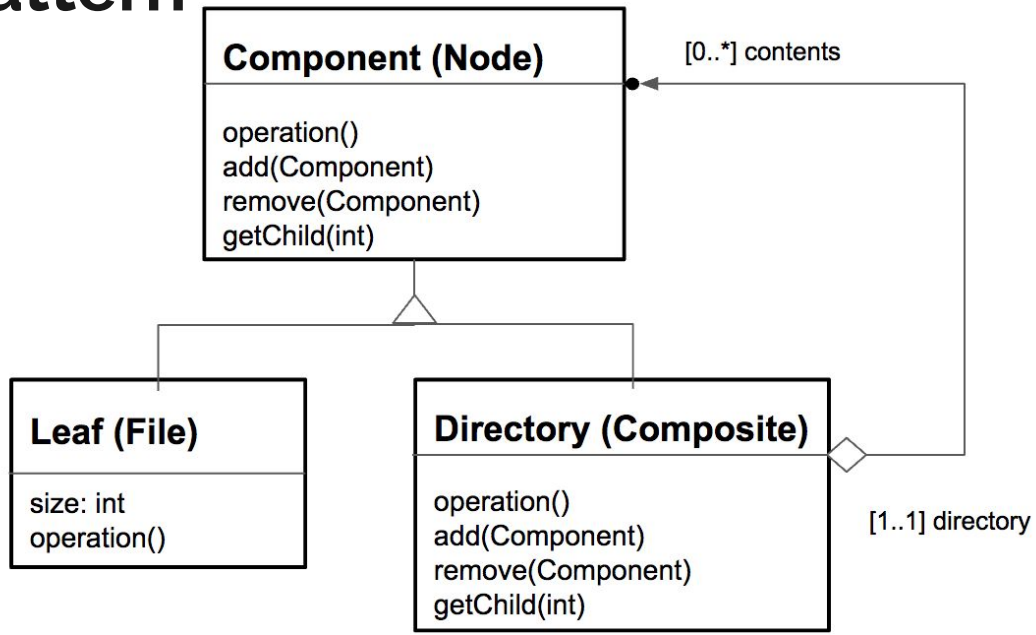
Composite Pattern

Concept: It allows you to compose objects into tree like structures to represent part-whole hierarchies. Composite lets clients treat individual objects and compositions of objects uniformly.

Examples:

- https://dzone.com/articles/composite-design-pattern-java-0
- https://medium.com/@priya104/the-composite-pattern-2edec432dd58
- https://sourcemaking.com/design_patterns/composite

Composite Pattern



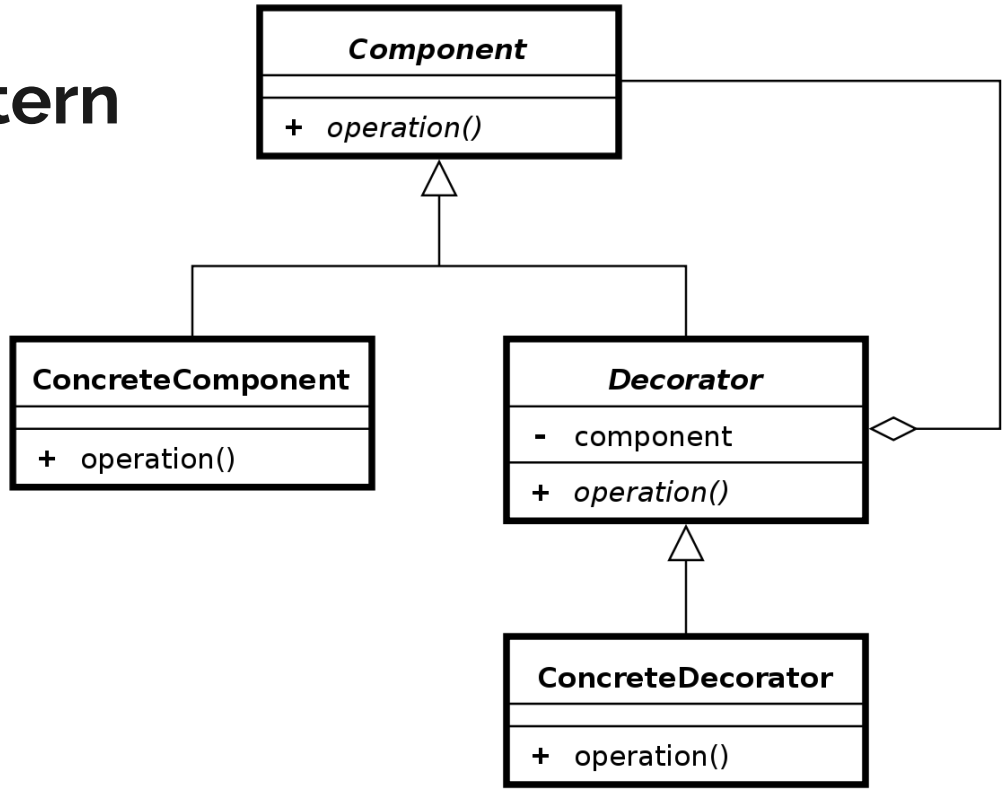
Decorator Pattern

Concept: Decorator pattern lets you dynamically change the behavior of an object at run time by wrapping them in an object of a decorator class.

Coding example:

- https://www.baeldung.com/java-structural-design-patterns

Decorator Pattern



Facade Pattern

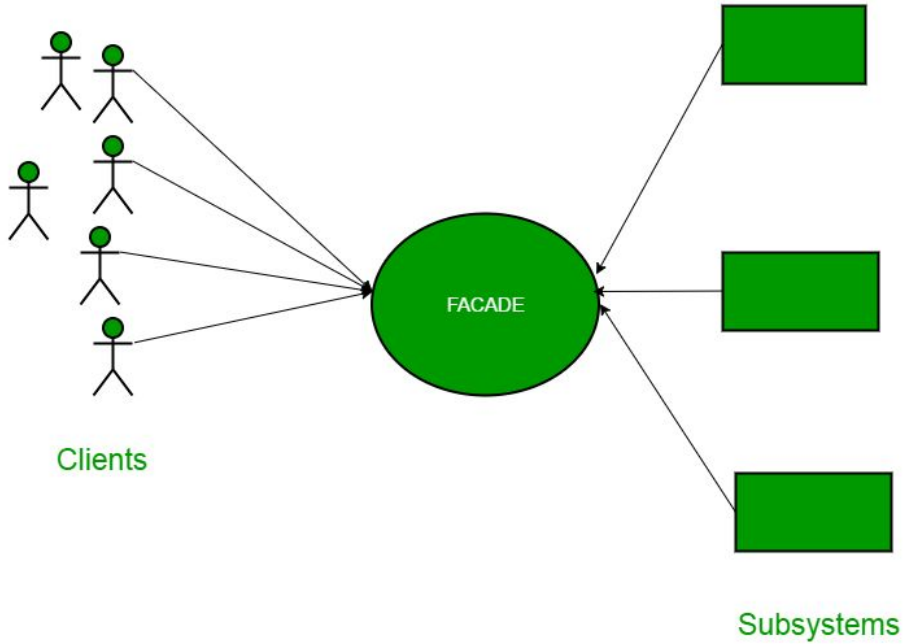
Concept: Use it when you have a complex system that you want to expose to clients in a simplified way.

Examples: turn on computer, phone

Coding examples:

- https://www.baeldung.com/java-facade-pattern

Facade Pattern



Proxy Pattern

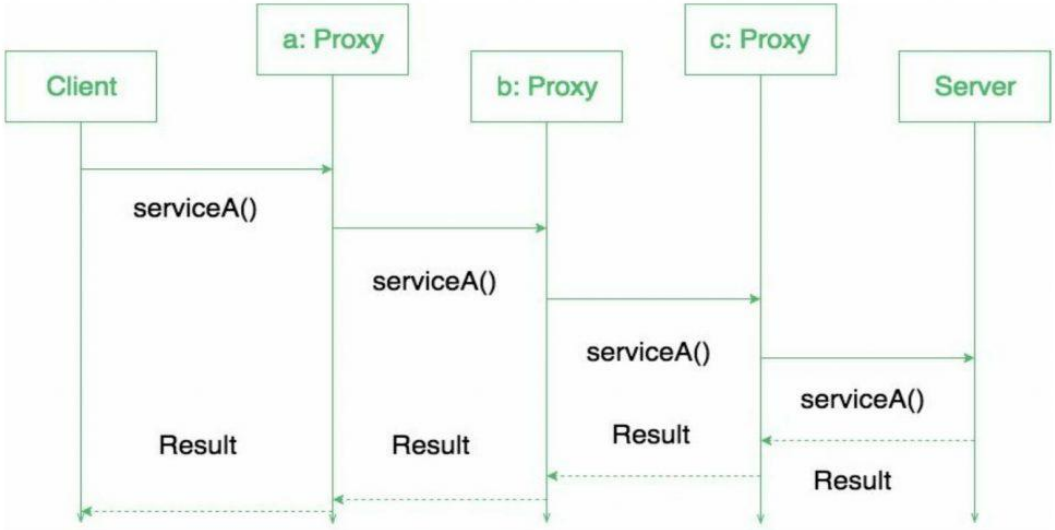
Concept: A proxy is a wrapper or agent object that is being called by the client to access the real serving object behind the scenes. Use of the proxy can simply be forwarding to the real object, or can provide additional logic.

Examples: security door, credit card

Coding examples:

- https://www.geeksforgeeks.org/proxy-design-pattern/

Proxy Pattern



Thank you!