Adapter. Convert the interface of a class into another interface clients expect. Adapter lets classes work together that couldn't otherwise because of incompatible interfaces.

#### **Object Adapter**



Class Adapter



**Command**. Encapsulate a request as an object, thereby letting you parameterize clients with different requests, queue or log requests, and support undoable operations.





**Composite**. Compose objects into tree structures to represent part-whole hierarchies. Composite lets clients treat individual objects and compositions of objects uniformly.



**Decorator**. Attach additional responsibilities to an object dynamically. Decorators provide a flexible alternative to subclassing for extending functionality.









Originator

SetMemento(Memento m)

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**Iterator**. Provide a way to access the elements of an aggregate object sequentially without exposing its underlying representation.



**Observer**. Define a one-to-many dependency between objects so that when one object changes state, all its dependents are notified and updated automatically.



**Memento**. Without violating encapsulation, capture and externalize an object's internal state so that the object can be restored to this state later.

Memento

GetState()

memento

Caretaker



**Proxy**. Provide a surrogate or placeholder for another object to control access to it.



**State**. Allow an object to alter its behavior when its internal state changes. The object will appear to change its class.



**Strategy**. Define a family of algorithms, encapsulate each one, and make them interchangeable. Strategy lets the algorithm vary independently from clients that use it.



**Template Method**. Define the skeleton of an algorithm in an operation, deferring some steps to subclasses. Template Method lets subclasses redefine certain steps of an algorithm without changing the algorithm's structure.



**Builder**. Separate the construction of a complex object from its representation so that the same construction process can create different representations.



**Singleton**. Ensure a class only has one instance, and provide a global point of access to it.



**Visitor**. Represent an operation to be performed on the elements of an object structure. Visitor lets you define a new operation without changing the classes of the elements on which it operates.



VisitConcreteElementB(aConcreteElementB)

OperationB()

Accept(aVisitor)

**Factory Method**. Define an interface for creating an object, but let subclasses decide which class to instantiate.



**Mediator**. Define an object that encapsulates how a set of objects interact. Mediator promotes loose coupling by keeping objects from referring to each other explicitly, and it lets you vary their interaction independently.



**Abstract Factory**. Provide an interface for creating families of related or dependent objects without specifying their concrete classes.



**Chain of Responsibility**. Avoid coupling the sender of a request to its receiver by giving more than one object a chance to handle the request.

