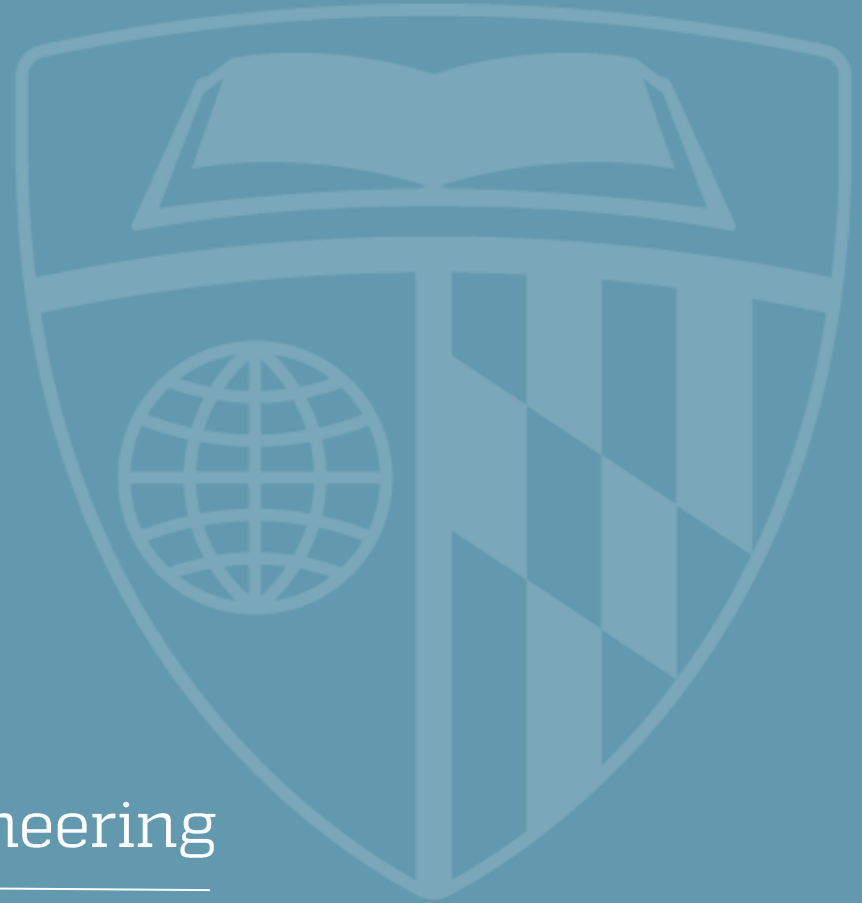




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Object Oriented Software Engineering

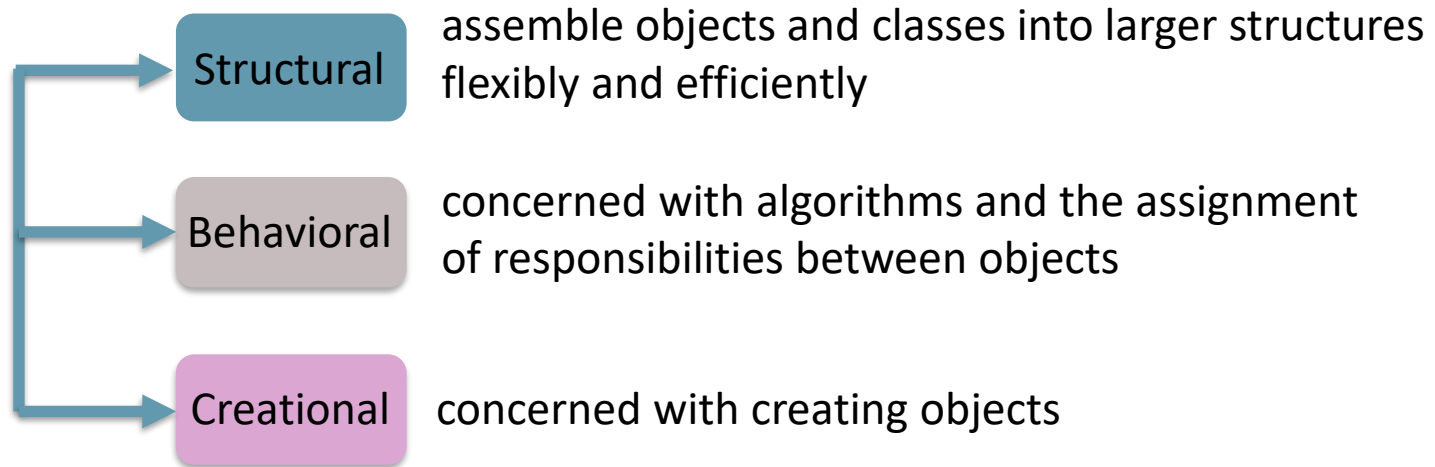
Design Pattern



Design Pattern

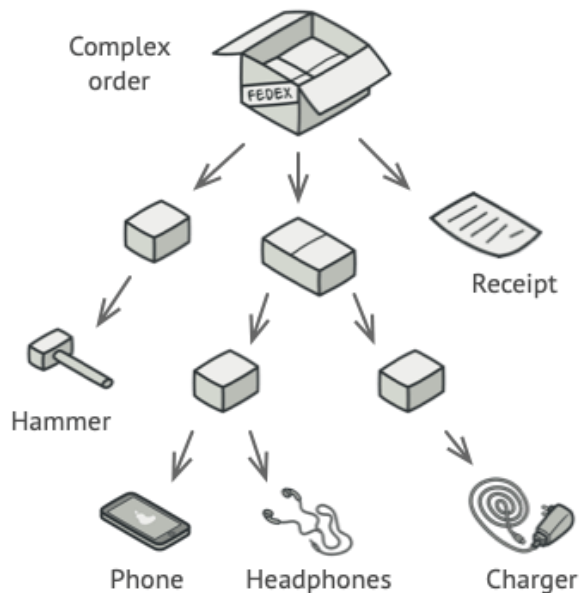
- ▶ A design pattern is a proven, reusable solution to a commonly occurring problem.
 - ❖ help you write code that is more reusable and maintainable
 - ❖ easier communication among developers

Design Patterns Kinds

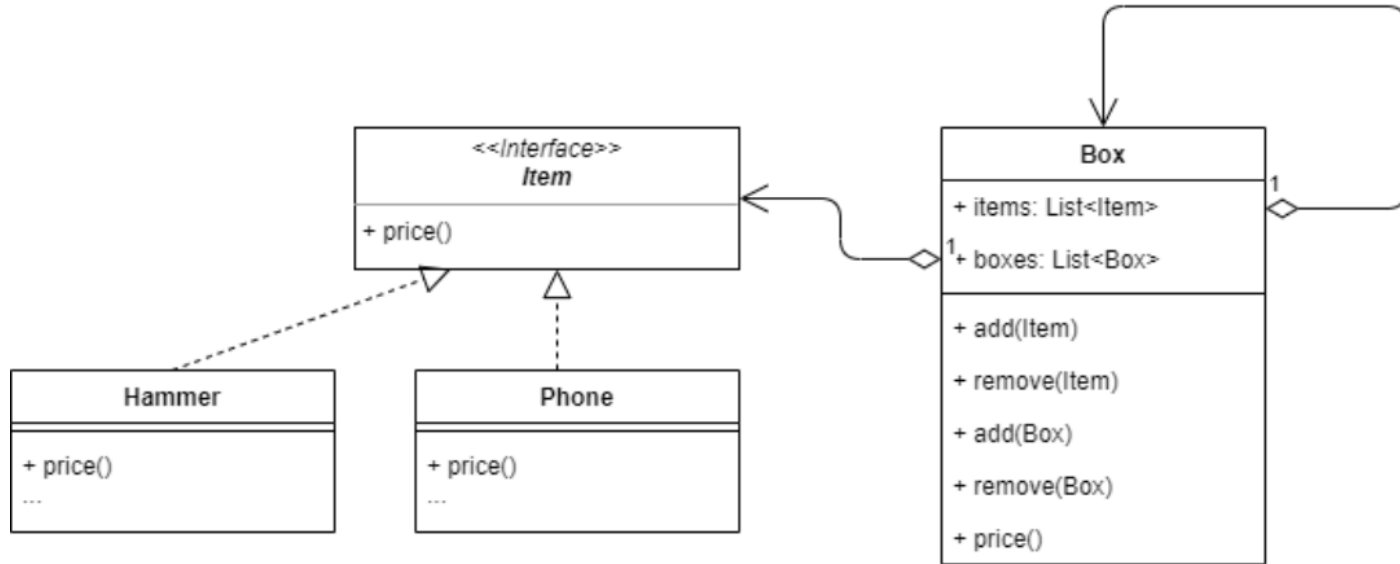


Composite Design Pattern

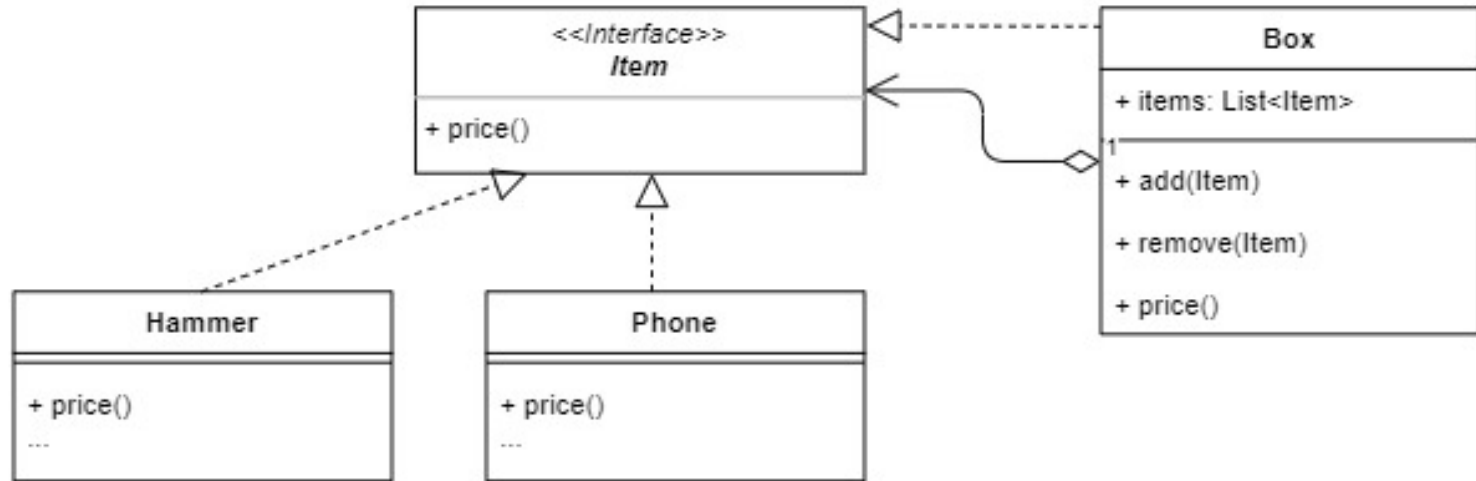
- ▶ a structural pattern to *compose* objects into tree structures and work with these structures as if they were individual objects



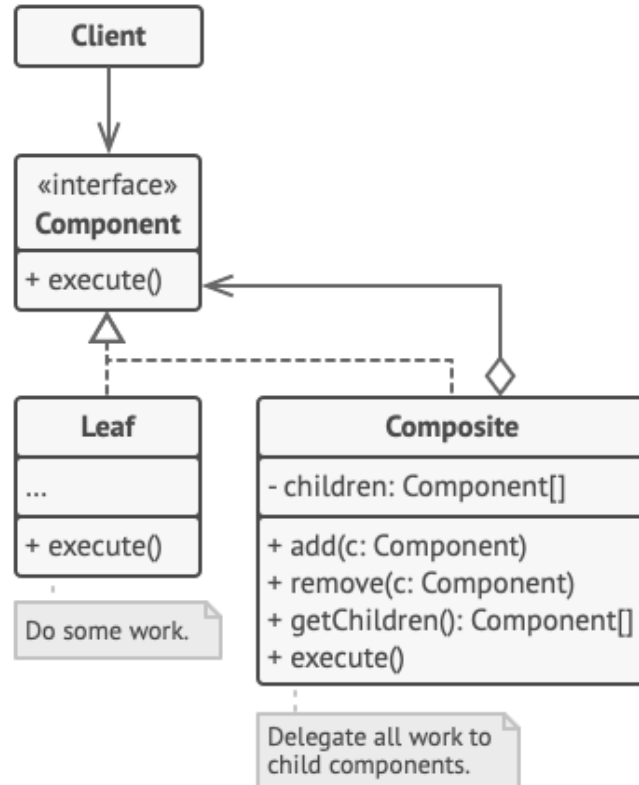
Composite Design Pattern



Composite Design Pattern



Composite Design Pattern

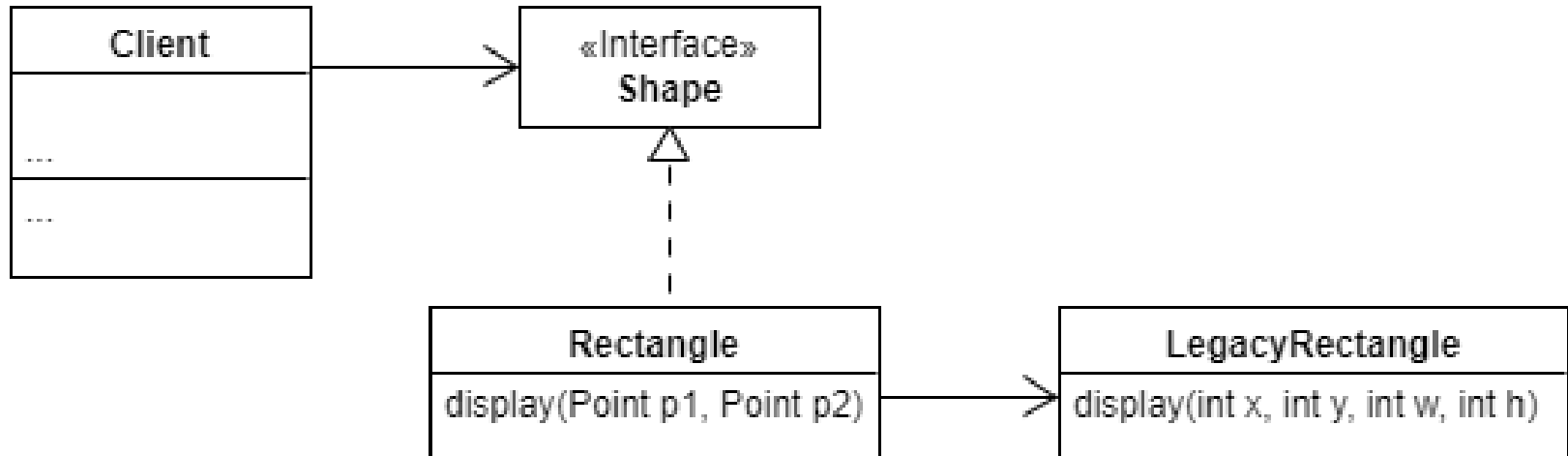


Adapter Pattern

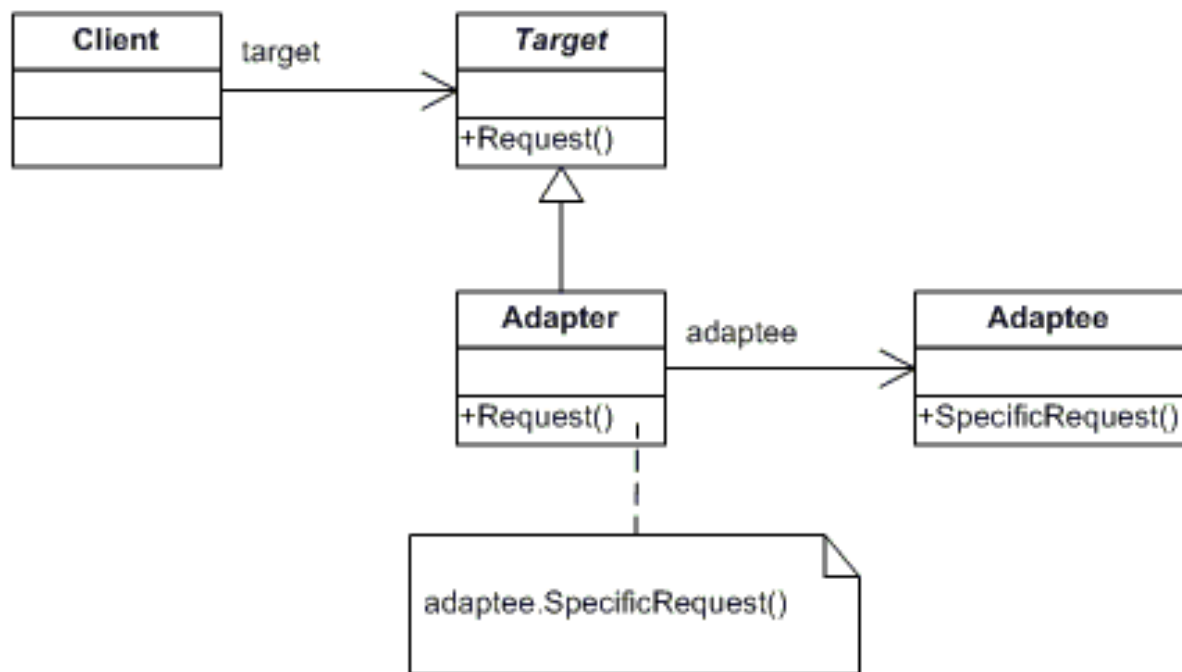
- ▶ a structural pattern to allow the interface of an existing class to be used as another interface



Adapter Pattern

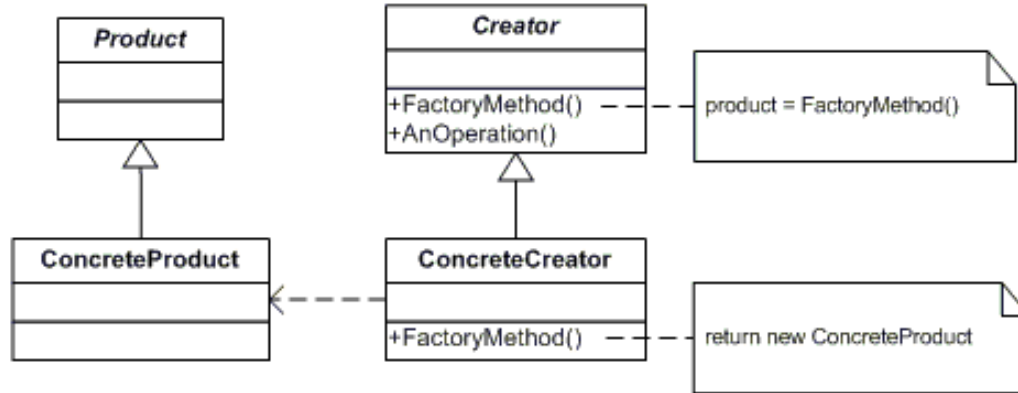


Adapter Pattern



Factory Pattern

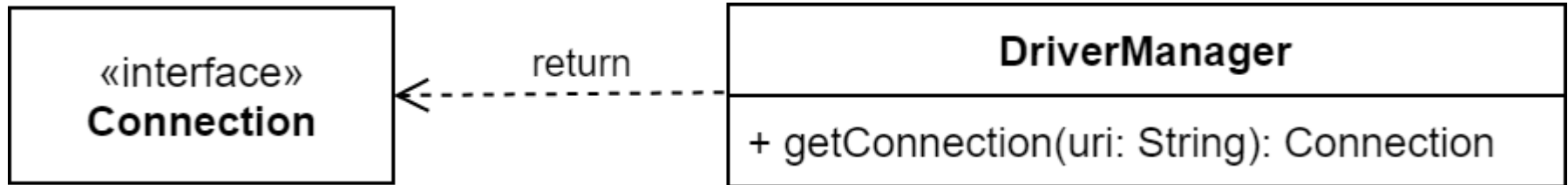
- ▶ a creational pattern to allow replacing direct object construction calls (using the *new* operator) with calls to a special factory method



Factory Pattern

► Factory pattern:

- ❖ makes client code more robust, less coupled
- ❖ when significant setup work needed to instantiate successfully
- ❖ preventing duplicate code (potentially)

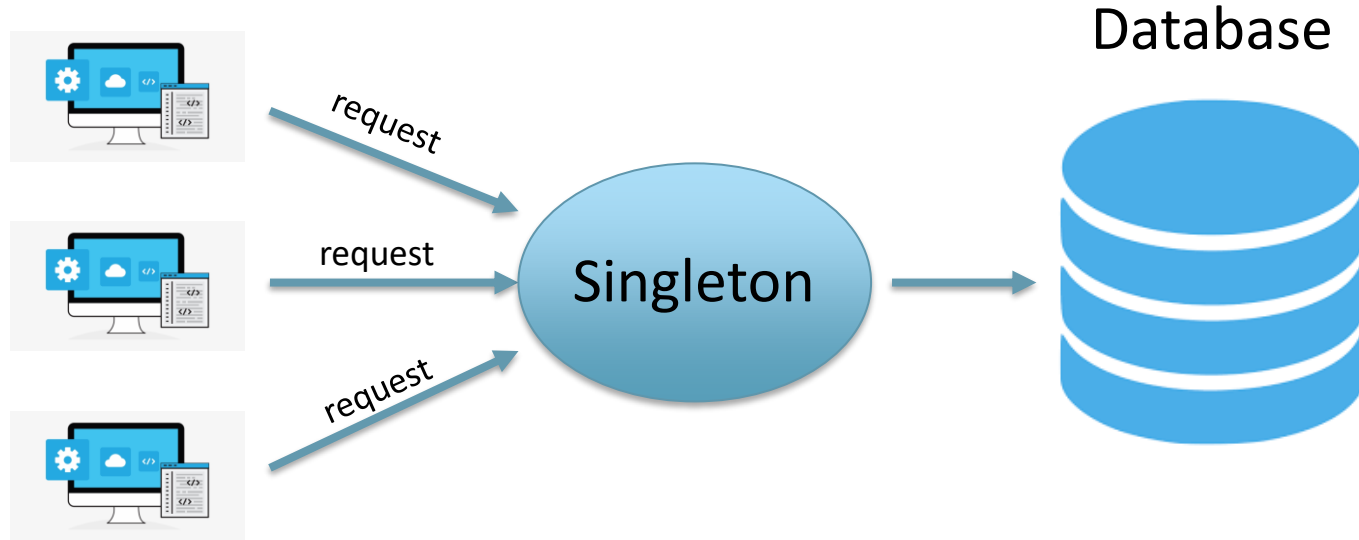


Singleton Design Pattern

- ▶ a creational pattern to ensure that a class has only one instance

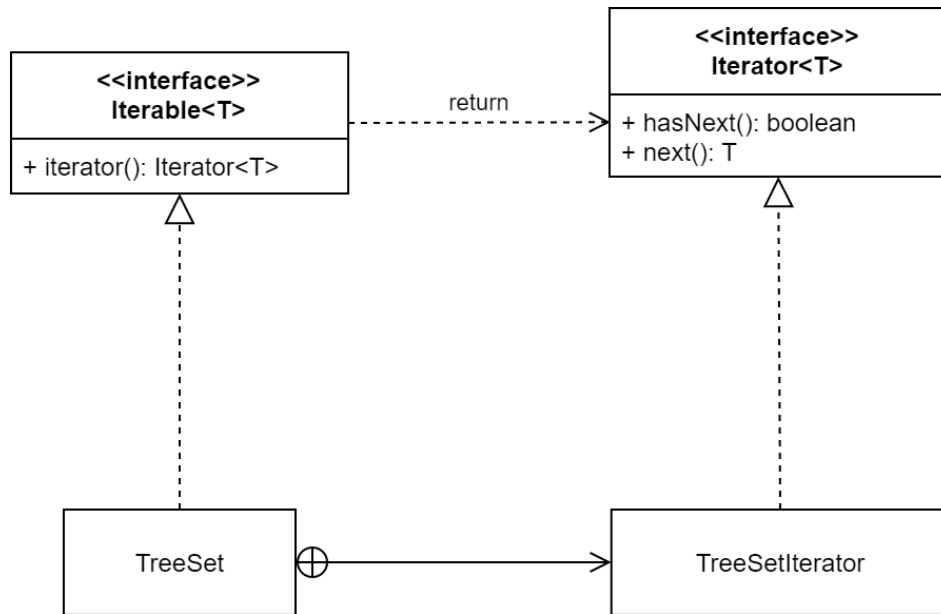
```
public final class Singleton {  
  
    private static final Singleton INSTANCE = new Singleton();  
  
    private Singleton() {}  
  
    public static Singleton getInstance() {  
        return INSTANCE;  
    }  
}
```

Singleton Design Pattern



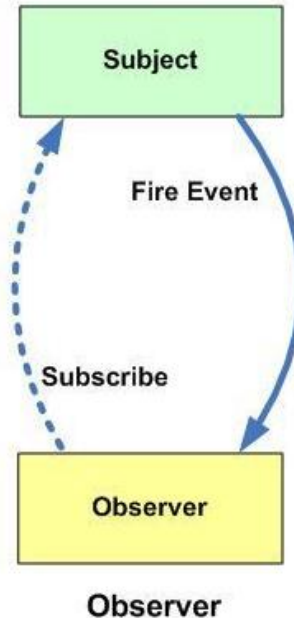
Iterator Design Pattern

- ▶ a behavioral pattern to traverse elements of a collection without exposing its underlying representation (tree, list, stack)

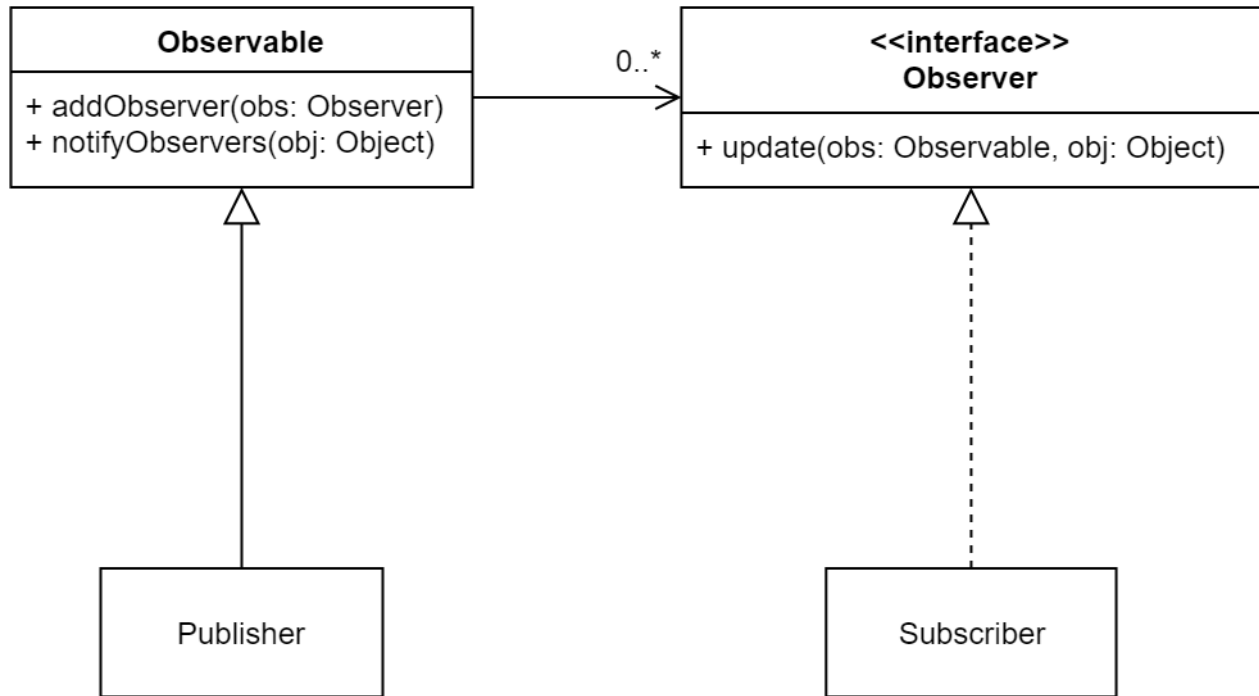


Observer Design Pattern

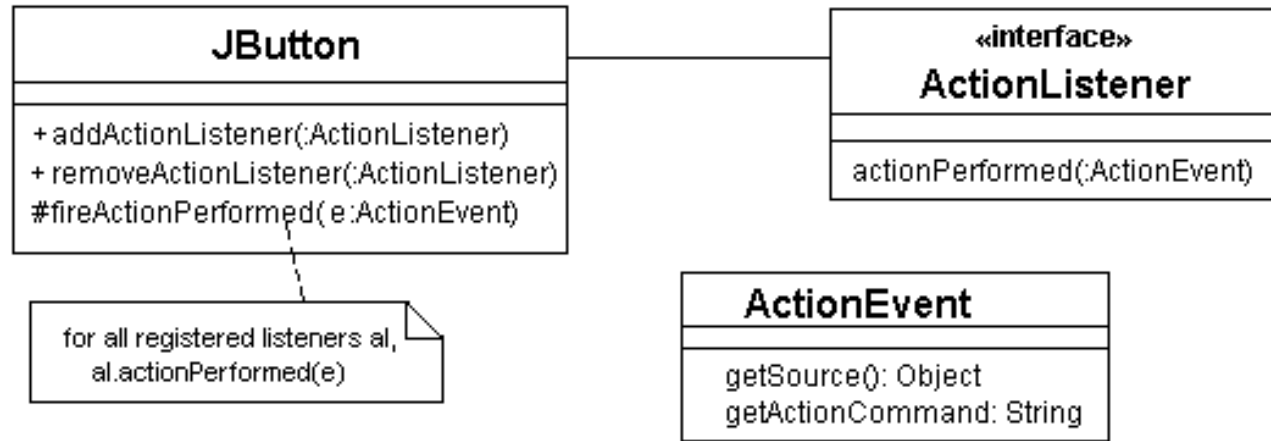
- ▶ a behavioral pattern to define a subscription mechanism to notify multiple objects about events of interest.



Observer Design Pattern



Observer Design Pattern





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