Flyweight Pattern

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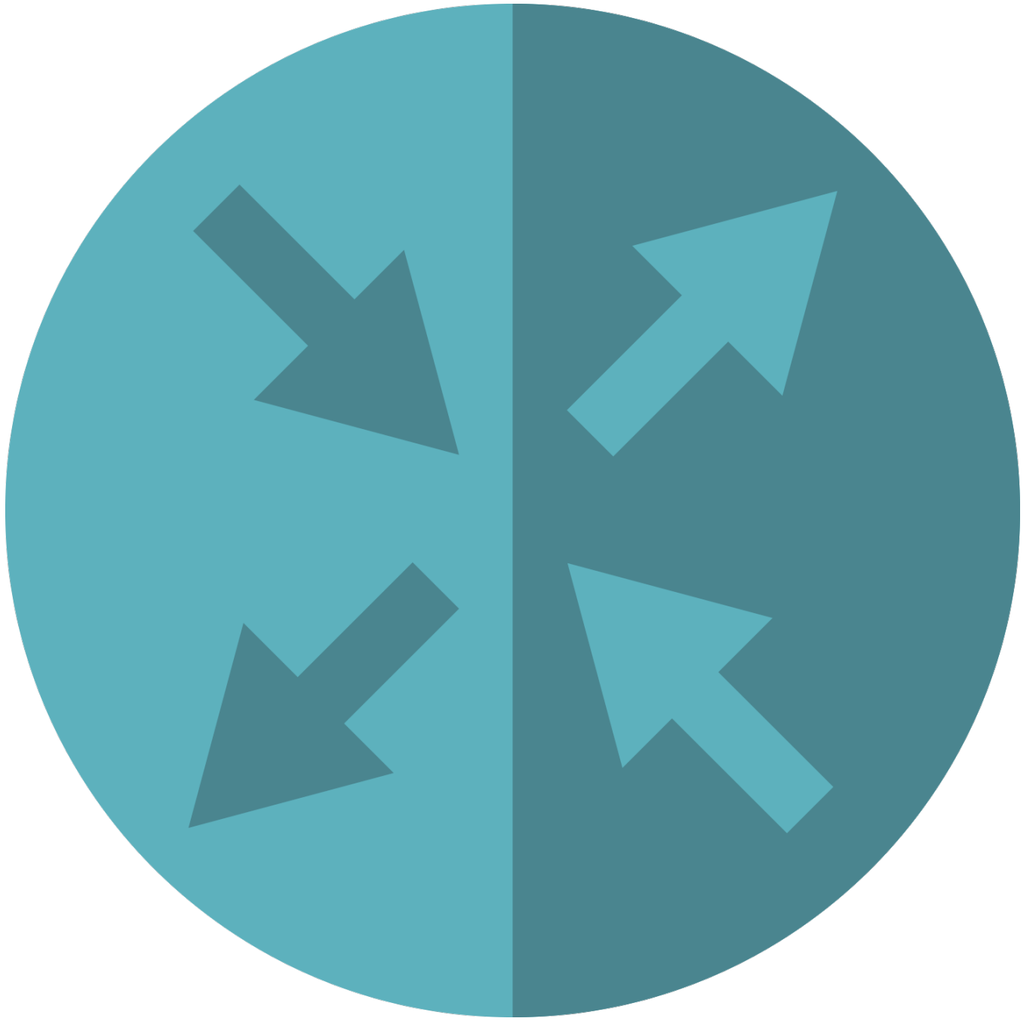
Concepts

- More efficient use of memory
- Large number of similar objects
- Immutable
- Most of the object states can be extrinsic
- Examples:
  - java.lang.String
  - java.lang.Integer#valueOf(int)
  - Boolean, Byte, Character, Short, Long



Design

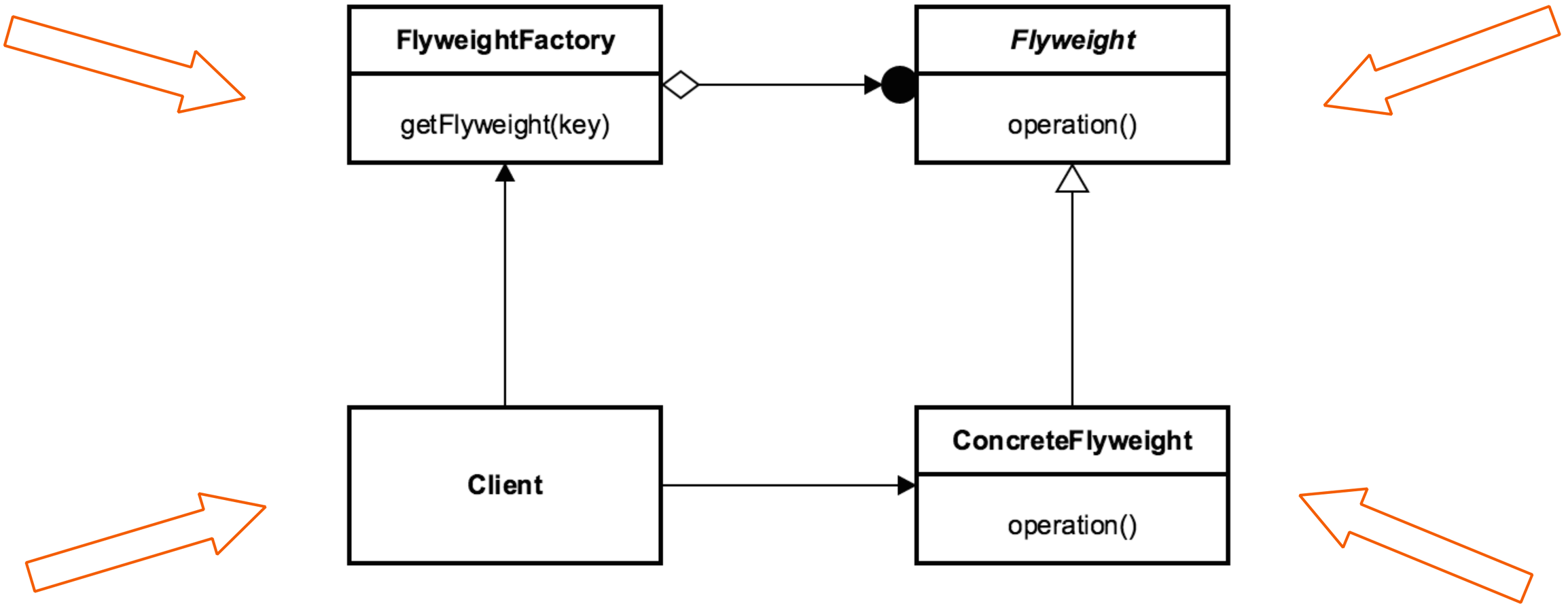
Pattern of patterns

Utilizes a Factory

Encompasses Creation and Structure

Client, Factory, Flyweight, ConcreteFlyweight

UML


FlyweightFactory
getFlyweight(key)
Flyweight
operation()
Client
ConcreteFlyweight
operation()

Everyday Example - Integer

```
Integer firstInt = Integer.valueOf(5);

Integer secondInt = Integer.valueOf(5);

Integer thirdInt = Integer.valueOf(10);

System.out.println(System.identityHashCode(firstInt));
System.out.println(System.identityHashCode(secondInt));
System.out.println(System.identityHashCode(thirdInt));
```

Exercise Flyweight

Inventory Management System

Client, Catalog, Order, Item

Pitfalls

- Complex pattern
- Premature optimization
- Must understand Factory
- Not a graphical pattern

Contrast

Flyweight

- Memory Optimization
- Optimization Pattern
- Immutable Objects

Facade

- Refactoring Pattern
- Simplified Client
- Provides a different interface

Flyweight Summary

- Great for Memory Management
- A little bit complex
- Used a lot by the core API