Nesneye Yönelik Yazılım Mühendisliği (376)

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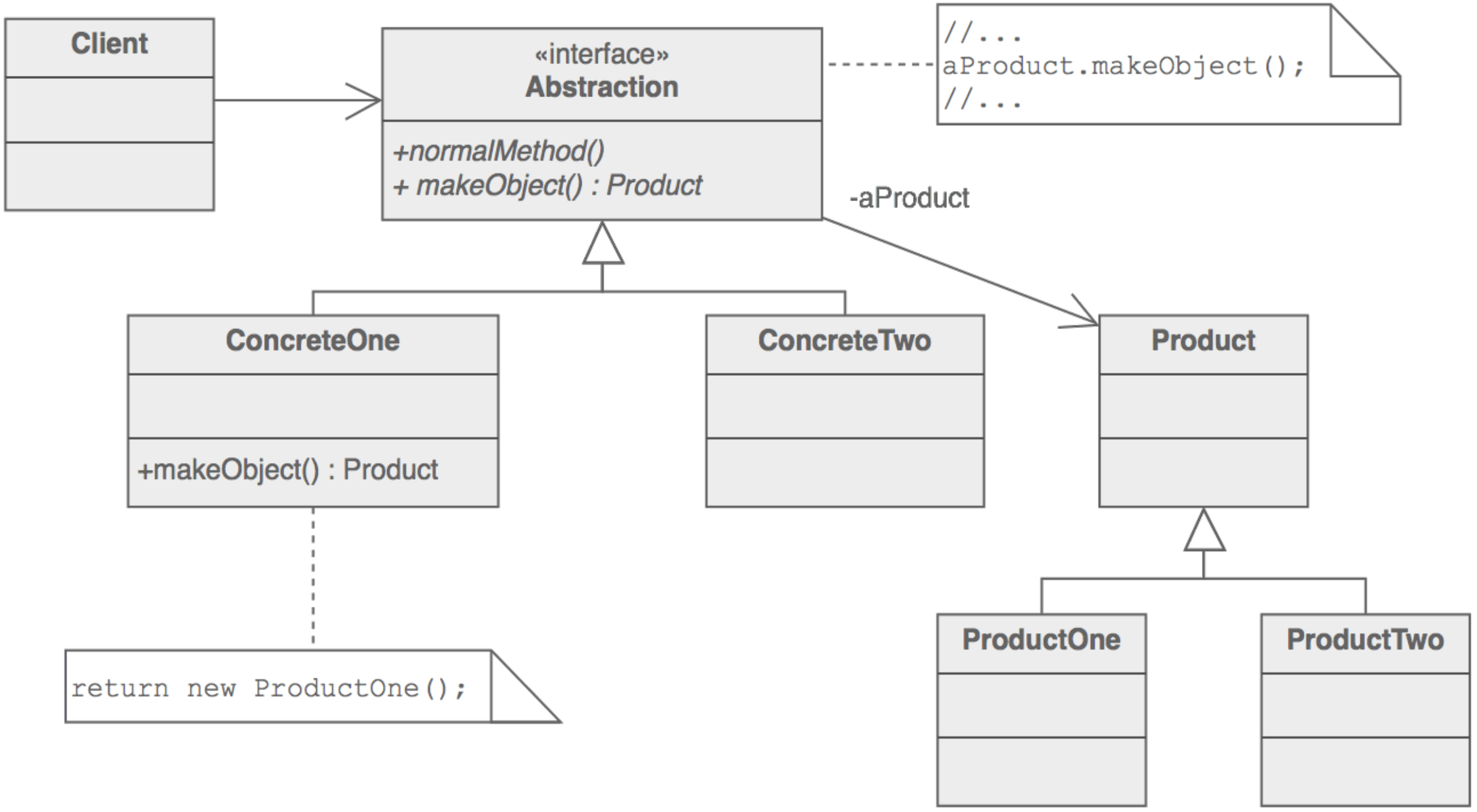
Creational Design Patterns : Factory

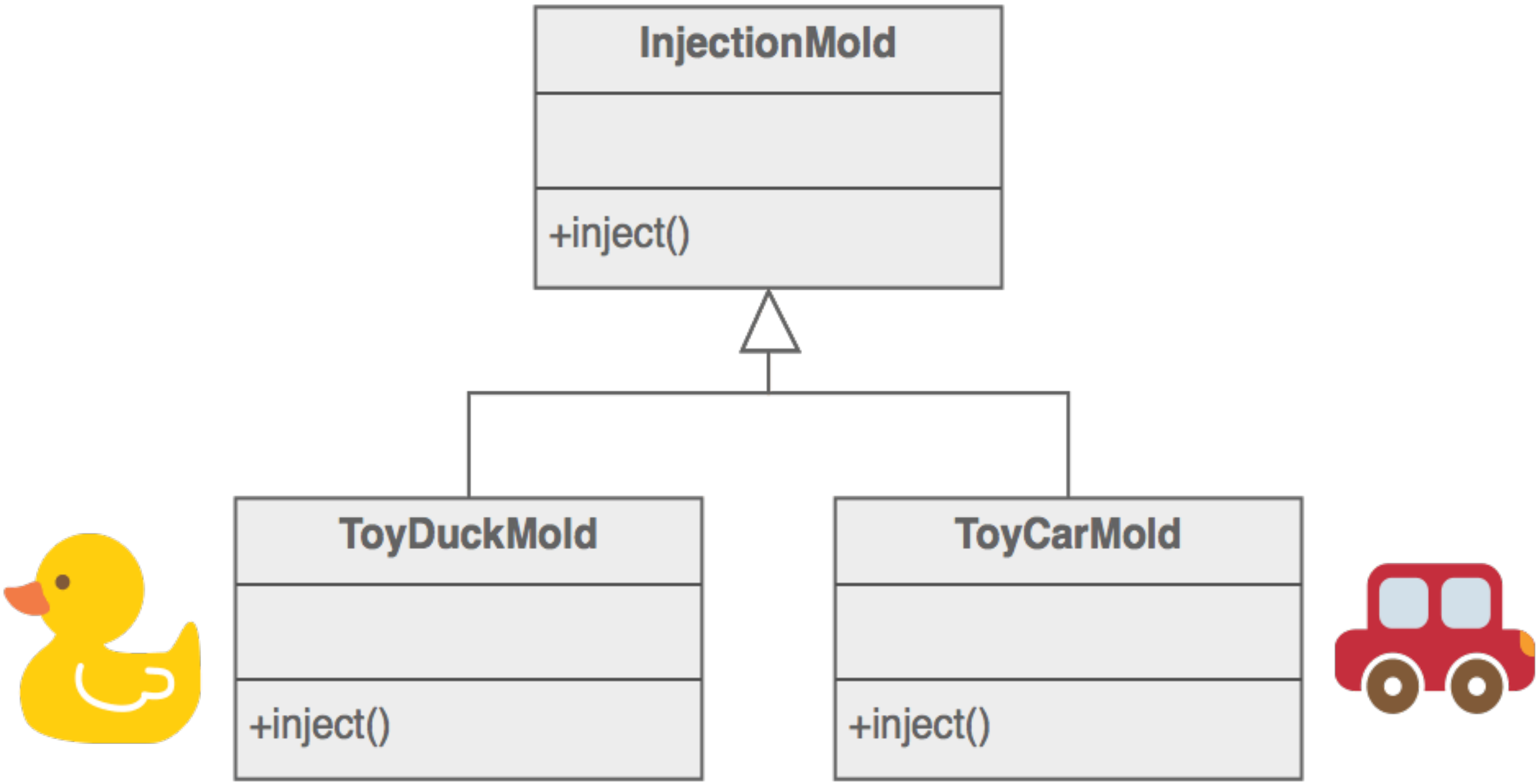
- Aynı arayüzü (interface) kullanan neslerin oluşturulması ve yönetimini sağlar. Alt sınıflara göre class nesnesi oluşturulur. *(Define an interface for creating an object, but let subclasses decide which class to instantiate. Factory Method lets a class defer instantiation to subclasses*

- **Factory metodu bir method içerisinde ihtiyaç duyulan nesnenin oluşturulup kullanılması için uygun olan sınıfı seçer ve örneğini oluştur.**
  - The Factory Method pattern encapsulates the functionality required to select and instantiate an appropriate class, inside a designated method referred to as a factory method
  - The Factory Method selects an appropriate class from a class hierarchy based on the application context and other influencing factors. It then instantiates the selected class and returns it as an instance of the parent class type.

Creational Design Patterns : Factory



Creational Design Patterns : Factory



Creational Design Patterns : Factory

```java
public abstract class Computer {

	public abstract String getRAM();
	public abstract String getHDD();
	public abstract String getCPU();

	@Override
	public String toString(){
		return "RAM= "+this.getRAM()+", "
			+ "HDD="+this.getHDD()+", "
			+ "CPU="+this.getCPU();
	}
}
```

```java
public class PC extends Computer {

	private String ram;
	private String hdd;
	private String cpu;

	public PC(String ram, String hdd, String cpu){
		this.ram=ram;
		this.hdd=hdd;
		this.cpu=cpu;
	}
	@Override
	public String getRAM() {
		return this.ram;
	}

	@Override
	public String getHDD() {
		return this.hdd;
	}

	@Override
	public String getCPU() {
		return this.cpu;
	}

}
```

```java
public class Server extends Computer {

	private String ram;
	private String hdd;
	private String cpu;

	public Server(String ram, String hdd, String cpu){
		this.ram=ram;
		this.hdd=hdd;
		this.cpu=cpu;
	}
	@Override
	public String getRAM() {
		return this.ram;
	}

	@Override
	public String getHDD() {
		return this.hdd;
	}

	@Override
	public String getCPU() {
		return this.cpu;
	}

}
```

Creational Design Patterns : Factory

```java
public abstract class Computer {

	public abstract String getRAM();
	public abstract String getHDD();
	public abstract String getCPU();

	@Override
	public String toString(){
		return "RAM= "+this.getRAM()+", "
			+ "HDD="+this.getHDD()+", "
			+ "CPU="+this.getCPU();
	}
}
```

```java
import com.journaldev.design.model.Computer;
import com.journaldev.design.model.PC;
import com.journaldev.design.model.Server;

public class ComputerFactory {

    public static Computer getComputer(String type, String ram,
            String hdd, String cpu){
        if("PC".equalsIgnoreCase(type))
            return new PC(ram, hdd, cpu);
        else if("Server".equalsIgnoreCase(type))
            return new Server(ram, hdd, cpu);

         return null;
        }
}
```

```java
public class PC extends Computer {

	private String ram;
	private String hdd;
	private String cpu;

	public PC(String ram, String hdd, String cpu){
		this.ram=ram;
		this.hdd=hdd;
		this.cpu=cpu;
	}
	@Override
	public String getRAM() {
		return this.ram;
	}

	@Override
	public String getHDD() {
		return this.hdd;
	}

	@Override
	public String getCPU() {
		return this.cpu;
	}

}
```

```java
public class Server extends Computer {

	private String ram;
	private String hdd;
	private String cpu;

	public Server(String ram, String hdd, String cpu){
		this.ram=ram;
		this.hdd=hdd;
		this.cpu=cpu;
	}
	@Override
	public String getRAM() {
		return this.ram;
	}

	@Override
	public String getHDD() {
		return this.hdd;
	}

	@Override
	public String getCPU() {
		return this.cpu;
	}

}
```

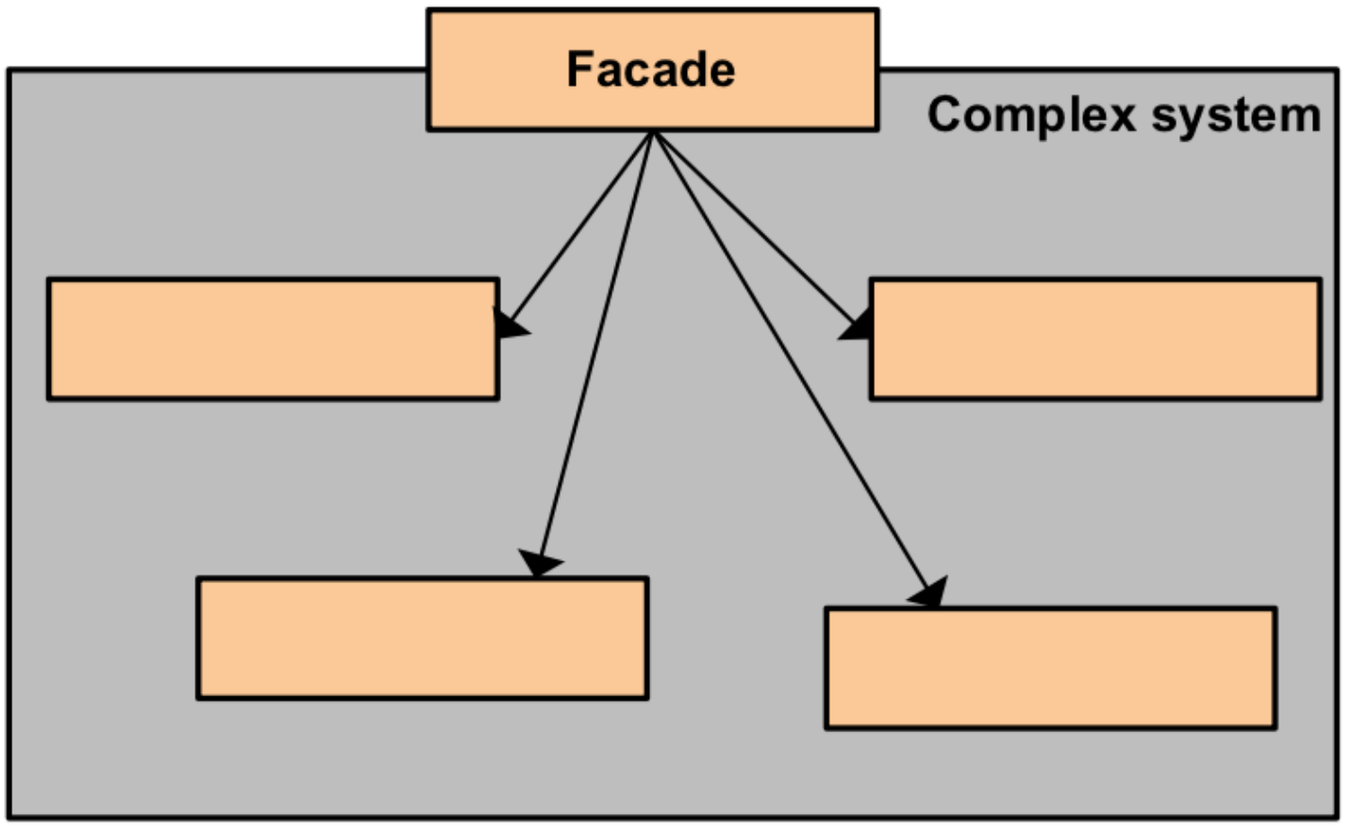
Structural Design Patterns: Facade

- Karmaşık olan bir sistemin kullanıcılara basit ve anlaşılır olarak sunulmasını sağlayan tasarım kalıbıdır. *(Provide a unified interface to a set of interfaces in a subsystem. Facade defines a higher-level interface that makes the subsystem easier to use.)*

- Karmaşık olan bir sistemi basit bir arayüz yardımıyla kullanıcılara sunulma imkanı saglar (Wrap a complicated subsystem with a simpler interface

- Bu tasarım kalıbı yardımıyla programlama becerisi olmayan kişilere hazırlayacağınız arayüzler yardımızla istek doğrultusunda düzenlenebilir (customizable) arayüzler sunma imkanı saglar.

Structural Design Patterns: Facade

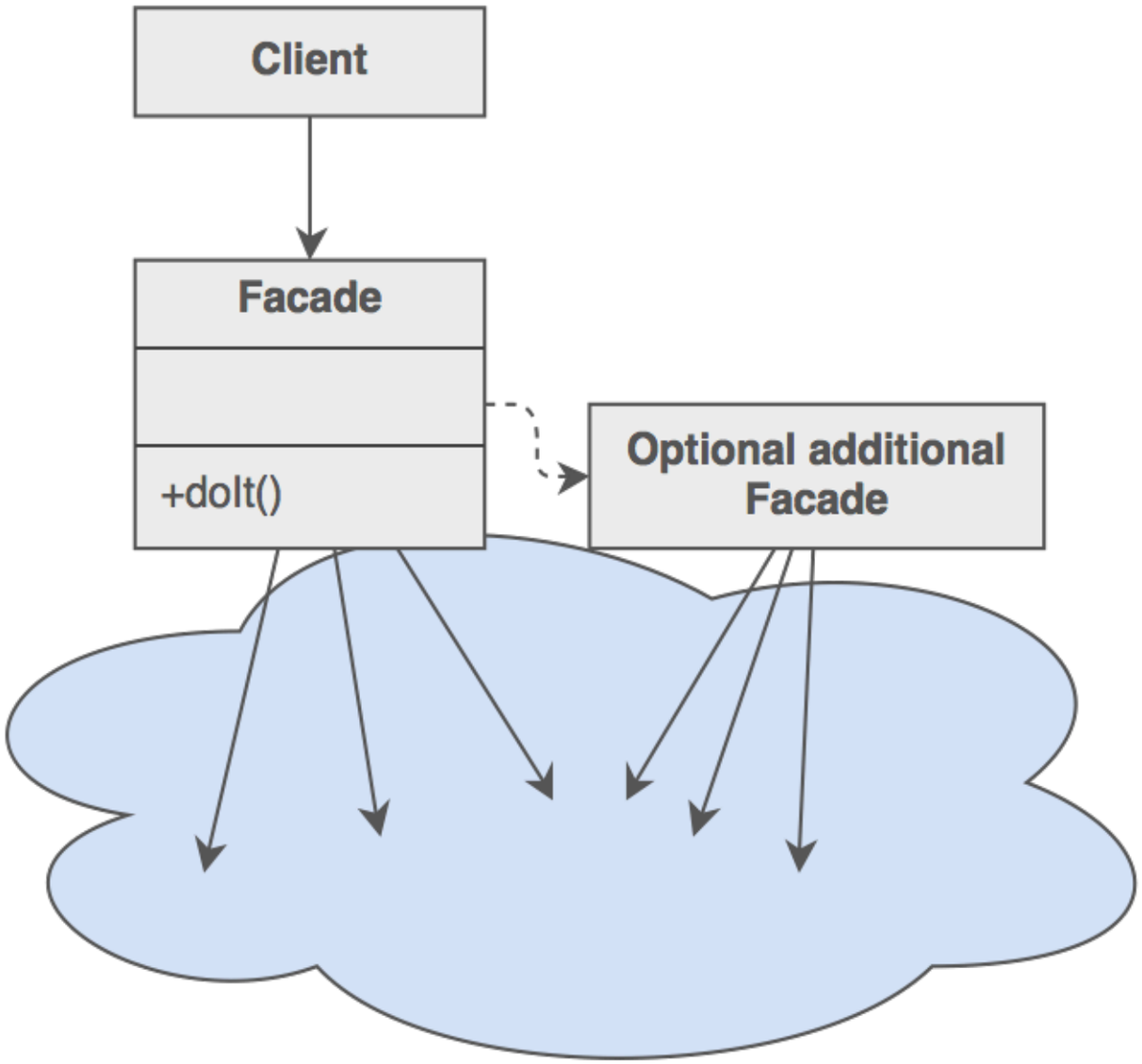


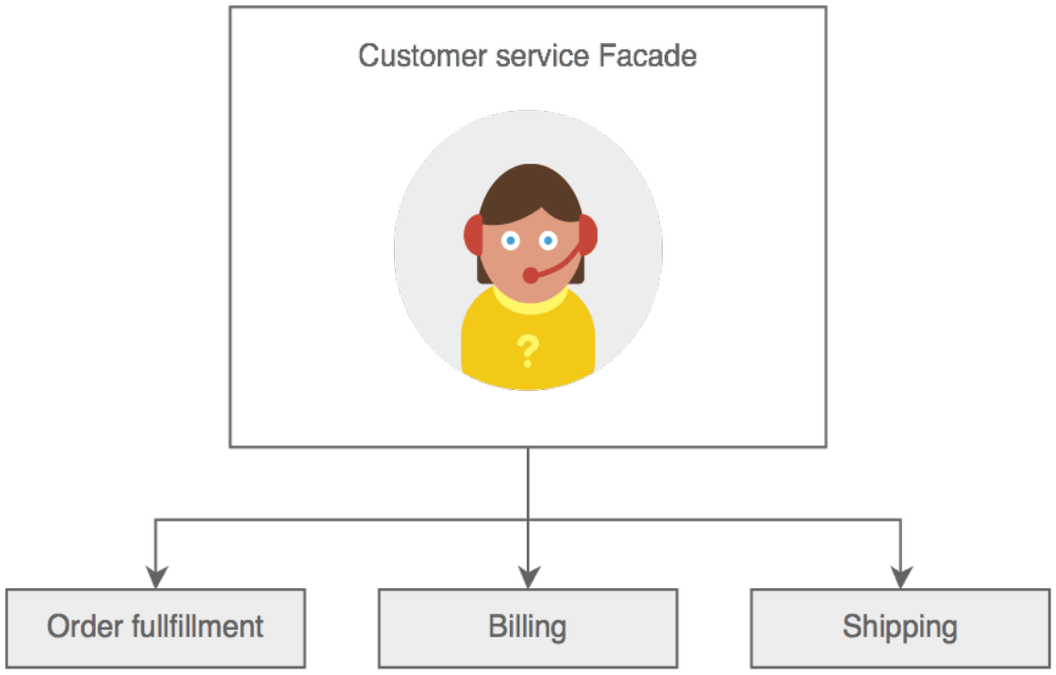
Facade

Type: Structural

What it is:
Provide a unified interface to a set of interfaces in a subsystem. Defines a high-level interface that makes the subsystem easier to use.

Structural Design Patterns: Facade





Structural Design Patterns: Facade

```
public class ScheduleServerFacade {
    private final ScheduleServer scheduleServer;
    public ScheduleServerFacade(ScheduleServer scheduleServer){
        this.scheduleServer = scheduleServer;
    }

    public void startServer(){
        scheduleServer.startBooting();
        scheduleServer.readSystemConfigFile();
        scheduleServer.init();
        scheduleServer.initializeContext();
        scheduleServer.initializeListeners();
        scheduleServer.createSystemObjects();
    }

    public void stopServer(){
        scheduleServer.releaseProcesses();
        scheduleServer.destory();
        scheduleServer.destroySystemObjects();
        scheduleServer.destoryListeners();
        scheduleServer.destoryContext();
        scheduleServer.shutdown();
      }
}
```

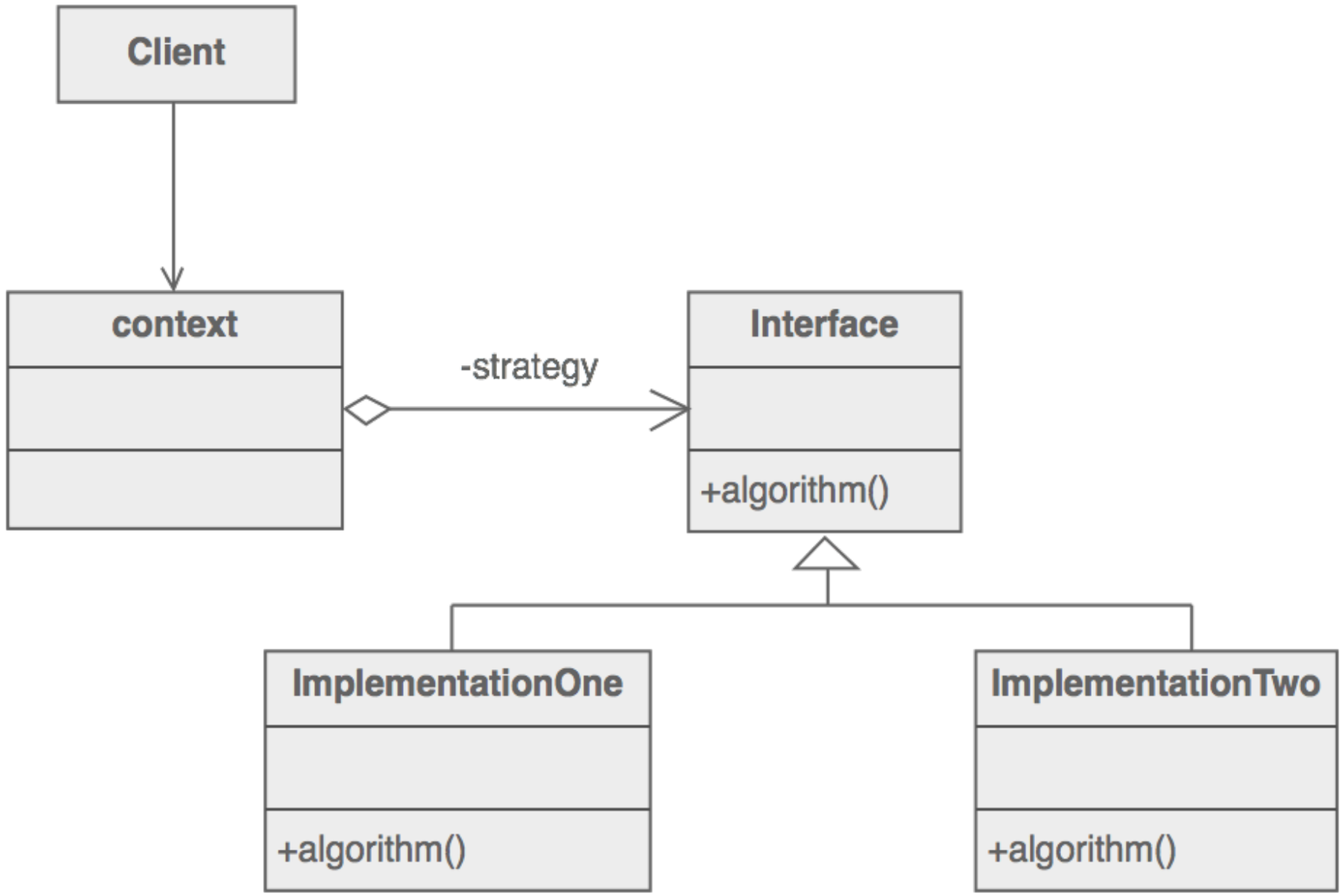
```
public class TestFacade {
    public static void main(String[] args) {
            ScheduleServer scheduleServer = new ScheduleServer();
            ScheduleServerFacade facadeServer =
                    new ScheduleServerFacade(scheduleServer );
            facadeServer.startServer();
            System.out.println("Start working.....");
            System.out.println("After work done.........");
            facadeServer.stopServer();
}
}
```

Behavioral Design Patterns: Strategy

- Birbirinin yerine dönüşümlü olarak kullanılabilecek olan algoritma veya yöntemleri tanımlamak için kullanılan tasarım kalıbıdır. *defines a family of algorithms, encapsulating each one, and making them interchangeable*

- Strateji tasarım kalıbı algoritmaların kullanıcıdan bağımsız olarak çeşitilik göstermesini saglar *Strategy lets the algorithm vary independently from the clients that use it*

Behavioral Design Patterns: Strategy



Behavioral Design Patterns: Strategy

```java
public interface TextFormatter {

        public void format(String text);

}
```

```java
public class ArialTextFormatter implements TextFormatter {

        @Override
        public void format(String text) {
                System.out.println("[ArialTextFormatter]: "+text);
        }

}
```

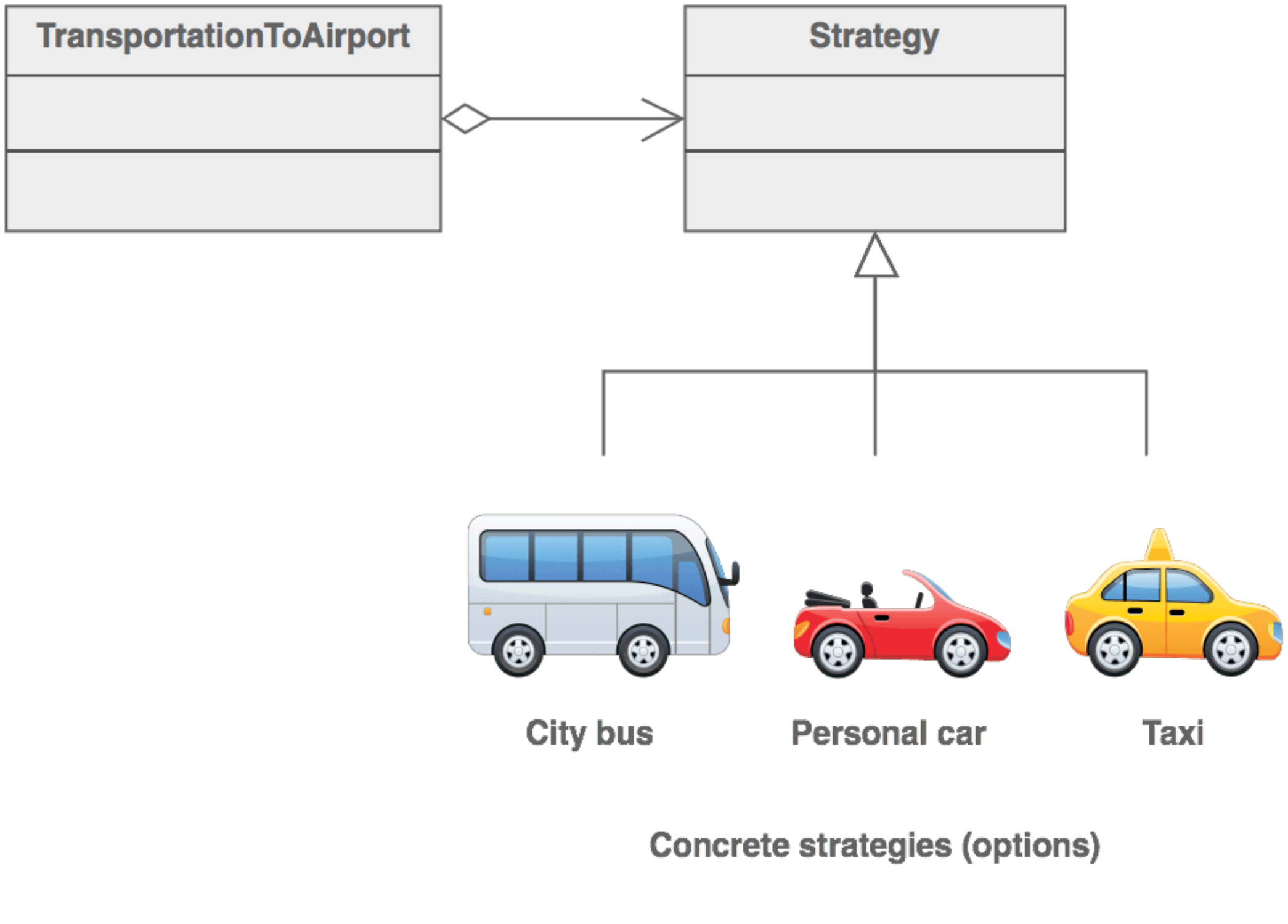
```java
public class LowerTextFormatter implements TextFormatter{

        @Override
        public void format(String text) {
                System.out.println("[LowerTextFormatter]: "+text.toLowerCase());
        }

}
```

```java
public class CapTextFormatter implements TextFormatter{

        @Override
        public void format(String text) {
                System.out.println("[CapTextFormatter]: "+text.toUpperCase());
        }

}
```

Behavioral Design Patterns: Strategy

```
public class TestStrategyPattern {

        public static void main(String[] args) {
                TextFormatter formatter = new CapTextFormatter();
                TextEditor editor = new TextEditor(formatter);
                editor.publishText("Testing text in caps formatter");

                formatter = new LowerTextFormatter();
                editor = new TextEditor(formatter);
                editor.publishText("Testing text in lower formatter");

        }

}
```

Behavioral Design Patterns: Strategy



Behavioral Design Patterns: Strategy