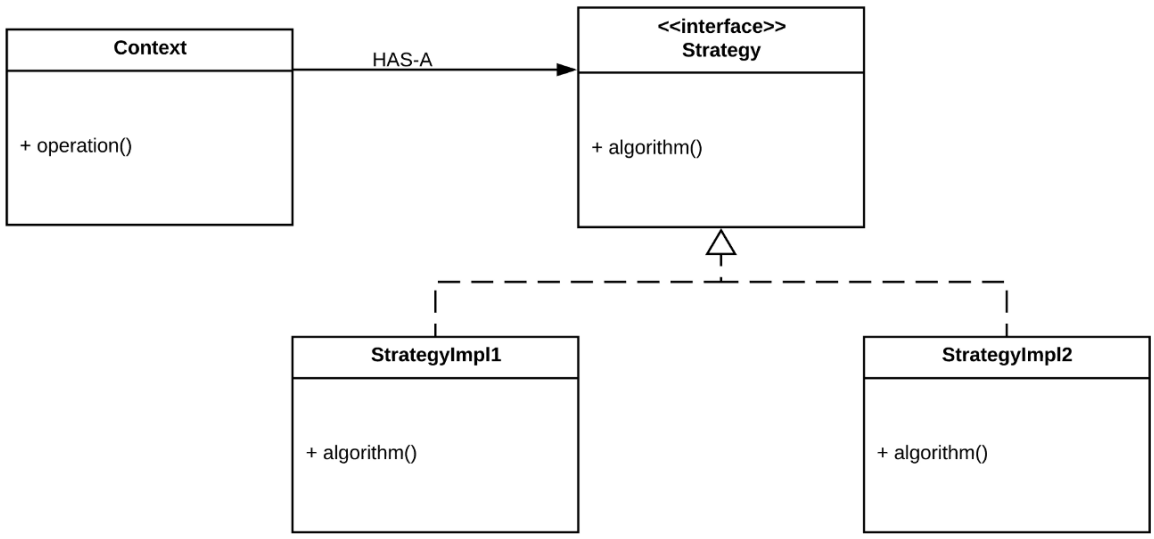
14. Design Patterns - day 2 of 2 (1)

Strategy Pattern

Strategy Pattern says that "defines a family of functionality, encapsulate each one, and make them interchangeable".

The Strategy Pattern is also known as Policy.



Benefits:

- It provides a substitute to subclassing.
- It defines each behavior within its own class, eliminating the need for conditional statements.
- It makes it easier to extend and incorporate new behavior without changing the application.

Usage:

- When the multiple classes differ only in their behaviors.e.g. Servlet API.
- It is used when you need different variations of an algorithm.

```
package design.designpatterns.strategypattern;
public class StrategyPatternJava {

public static void main(String[] args) {
```

```
Context context = new Context(new Add());

}
}

public class StrategyClient {
    public static void main(String[] args) {

        Context context1 = new Context(new Multiply());

        System.out.print("Java new Multiply() Strategy " + context1.apply(2, 3));
    }
}


interface Strategy {
    int compute(int a, int b);
}

class Add implements Strategy {
    public int compute(int a, int b) {

        return a + b;
    }

}

class Multiply implements Strategy {
    public int compute(int a, int b) {

        return a * b;
    }

}

class Context {
    final Strategy strategy;

    public Context(Strategy strategy) {
        this.strategy = strategy;

    }

    public int apply(int a, int b) {
        return strategy.compute(a, b);

    }
}
```

Another Example

```
import java.math.BigDecimal;

public class Client {
    public static void main(String[] args) {
        Discounter easterDiscounter = new EasterDiscounter();

        BigDecimal discountedValue = easterDiscounter
                .applyDiscount(BigDecimal.valueOf(100));
        System.out.println(discountedValue);


    }

    interface Discounter {
        BigDecimal applyDiscount(BigDecimal amount);
    }
    //Then let's say we want to apply a 50% discount at Easter and a 10% discount at Christmas. Let's implement our interface for each of t

    static class EasterDiscounter implements Discounter {
        @Override
        public BigDecimal applyDiscount(final BigDecimal amount) {
            return amount.multiply(BigDecimal.valueOf(0.5));
        }
    }
    //Java 8
    //Discounter easterDiscounter = amount -> amount.multiply(BigDecimal.valueOf(0.5));
```

```
    static class ChristmasDiscounter implements Discounter {
        @Override
        public BigDecimal applyDiscount(final BigDecimal amount) {
            return amount.multiply(BigDecimal.valueOf(0.9));
        }
    }
}
```

References:
https://javarevealed.wordpress.com/2013/07/05/factory-meth od-design-pattern/

https://www.geeksforgeeks.org/