Decorator Pattern

장식과 내용물을 동일시해서 장식을 여러 겹 중복되게 하기. (예를 들어 케이크에 초콜릿으로 코팅하면 초콜릿 케이크, 생크림으로 코팅하면 생크림 케이크)

- 장식이 되는 기능을 하나씩 추가하면서 좀 더 목적에 맞는 객체 만들기

Architecture, Modeling, DesignPattern, Structural

Component

```
package component;
import java.util.stream.IntStream;

public abstract class Display {
    public abstract int getColumns();
    public abstract int getRows();
    public abstract String getRowText(int row);
    public final void show() {
        IntStream.range(0, getRows()).forEach(row ->
System.out.println(getRowText(row)));
    }
}
```

ConcreteComponent

```
package component;

public class StringDisplay extends Display {
    private String str;

    public StringDisplay(String str) {
        this.str = str;
    }

    @Override
    public int getColumns() {
        return str.getBytes().length;
    }

    @Override
    public int getRows() {
        return 1;
    }
```

```
    @Override
    public String getRowText(int row) {
        return row == 0? str : null;
    }
}
```

Decorator

```
package decorator;
import component.Display;

public abstract class Border extends Display {
    protected Display display; // 내용물
    public Border(Display display) {
        this.display = display;
    }
}
```

ConcreteDecorator

```
package decorator;

public class SideBorder extends Border {
    private char borderDecorator;
    public SideBorder(Display display, char borderDecorator) {
        super(display);
        this.borderDecorator = borderDecorator;
    }
    @Override
    public int getColumns() {
        return display.getColumns() + 2; // 양쪽 장식물 길이 더한 값
    }

    @Override
    public int getRows() {
        return display.getRows();
    }

    @Override
    public String getRowText(int row) {
        StringBuilder sb = new StringBuilder();
        sb.append(borderDecorator);
        sb.append(display.getRowText(row));
        sb.append(borderDecorator);
```

```
        return sb.toString();
    }
}
```

```
package decorator;

import java.util.stream.IntStream;

import component.Display;

public class FullBorder extends Border {

    public FullBorder(Display display) {
        super(display);
    }
    @Override
    public int getColumns() {
        return display.getColumns() + 2; // 양쪽 장식물 길이 더한 값
    }

    @Override
    public int getRows() {
        return display.getRows() + 2; // 상하 장식물 길이 더한 값
    }

    @Override
    public String getRowText(int row) {
        StringBuilder sb = new StringBuilder();
   // 상하 사이인 경우
        if(0 < row && row < display.getRows() + 1) {
            sb.append('|');
            sb.append(display.getRowText(row - 1));
            sb.append('|');
        }
        else {
            sb.append('+');
            IntStream.range(0, display.getColumns()).forEach(i ->
sb.append('-'));
            sb.append('+');
        }
        return sb.toString();
    }
}
```

Client

```
import component.Display;
import component.StringDisplay;
import decorator.FullBorder;
import decorator.SideBorder;

public class Main {
    public static void main(String[] args) {
        Display component = new StringDisplay("Hello world");
        Display decorator1 = new SideBorder(component, '#');
        Display decorator2 = new FullBorder(decorator1);
        component.show();
        decorator1.show();
        decorator2.show();
        System.out.println();
        Display composite = new SideBorder(
                        new FullBorder(
                            new FullBorder(
                                new SideBorder(
                                    new FullBorder(
                                        new StringDisplay("Hello world")
                                    ) , '*')))
                    , '/');
        composite.show();
    }
}


/*
Hello world
#Hello world#
+-------------+
|#Hello world#|
+-------------+

/+-----------------+/
/|+---------------+|/
/||*+-----------+*||/
/||*|Hello world|*||/
/||*+-----------+*||/
/|+---------------+|/
/+-----------------+/
*/
```

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