Java Sample Trigger and Masker

> 注意事項：
> 1．文章內容為使用二進制實現開關效果
> 2．利用一個整數來存取大量開關
> 3．文章及程式碼皆為 `CookieTsai` 撰寫，可供參考及分享

目錄

前言

有些時候，在 Coding 時會面臨需要使用大量開關來處理的問題。

在這時候程式碼會使用大量 if else 造成不易閱讀及不易維護。除此之外，在儲存這些設定時可能會需要用到許多欄位。過多的判斷式及欄位將造成維護上的困擾。

因此，這幾天嘗試實作了一個叫 Trigger 還有 Masker 的兩種物件。Trigger and Masker 是利用一個整數來便於管理及儲存這大量的開關的設計。

文章的 Start Demo 是實作 SampleMasker 及 SampleMain 來管理五個開關。

Defined Trigger and Masker

Trigger Java Class

```java
package sample.trigger;

/**
 * Created by Cookie on 15/10/29.
 */
public class Trigger {
    public static final int ALL_ON  = -1;
    public static final int ALL_OFF = 0;

    private int value;

    public Trigger(Masker... maskers) {
        for (Masker masker: maskers) {
            on(masker);
        }
    }

    public void on(Masker... maskers){
        for (Masker masker: maskers) {
            value = (value | masker.getMask());
        }
    }

    public void off(Masker... maskers){
        for (Masker masker: maskers) {
            if (!isOn(masker)) {
                continue;
            }
            value -= masker.getMask();
        }
    }

    public boolean isOn(Masker masker){
        return (value & masker.getMask()) > 0;
    }

    public int getValue() {
        return value;
    }

    @Override
    public String toString() {
        return String.valueOf(getValue());
    }
}
```

Masker Interface

```
package sample.trigger;

/**
 * Created by Cookie on 15/10/29.
 */
public interface Masker {
    boolean isOn(int value);
    int getIndex();
    int getMask();
}
```

Start Demo

Sample Masker Java Class

```
package sample.trigger;

/**
 * Created by Cookie on 15/10/29.
 */
public enum  SampleMasker implements Masker {

    OPTION_01(1),
    OPTION_02(2),
    OPTION_03(3),
    OPTION_04(4),
    OPTION_05(5);

    private final int index;
    private final int mask;

    SampleMasker(int index) {
        this.index = index;
        this.mask = (1 << (index -1));
    }

    public int getIndex() {
        return index;
    }

    public int getMask() {
        return mask;
    }

    public boolean isOn(int value){
        return (value & getMask()) > 0;
```

```java
    }

    public static Trigger newTrigger() {
        return new Trigger();
    }

    public static Trigger newTrigger(Integer value) {
        if (value == null) {
            return new Trigger(values());
        }
        Trigger result = new Trigger();
        for (Masker masker: values()) {
            if (masker.isOn(value)) {
                result.on(masker);
            }
        }
        return result;
    }

    @Override
    public String toString() {
        return this.name();
    }
}
```

Smaple Main Java Class

```java
package sample.trigger;

/**
 * Created by Cookie on 15/10/29.
 */
public class SampleMain {

    public static void main(String[] args) {

        Trigger trigger;

        System.out.println("========= Sample 1 output =========");

        // Create a new Trigger
        trigger = SampleMasker.newTrigger();

        // Open the option 02 and 05
        trigger.on(SampleMasker.OPTION_02, SampleMasker.OPTION_05);

        // show all option
```

```
        for (Masker masker: SampleMasker.values()) {
            System.out.println(masker.toString() + " => " + trigger.isOn(masker) )
;
        }

        // show the trigger value
        System.out.println("Get Trigger Value => " + trigger.getValue());
        System.out.println();

        System.out.println("========= Sample 2 output =========");

        // Create a new Trigger,and all option be on
        trigger = SampleMasker.newTrigger(Trigger.ALL_ON);

        // Close the option 02 and 05
        trigger.off(SampleMasker.OPTION_04);

        for (Masker masker: SampleMasker.values()) {
            System.out.println(masker.toString() + " => " + trigger.isOn(masker) )
;
        }

        // show the trigger value
        System.out.println("Get Trigger Value => " + trigger.getValue());
        System.out.println();

        int value = trigger.getValue();

        System.out.println("========= Sample 3 output =========");

        // Using a trigger value to create a new Trigger
        trigger = SampleMasker.newTrigger(value);

        // show all option
        for (Masker masker: SampleMasker.values()) {
            System.out.println(masker.toString() + " => " + trigger.isOn(masker) )
;
        }

        // show the trigger value
        System.out.println("turn to Int Value => " + trigger.getValue());
        System.out.println();

    }
}
```

Console Output

```
========== Sample 1 output ==========
OPTION_01 => false
OPTION_02 => true
OPTION_03 => false
OPTION_04 => false
OPTION_05 => true
Get Trigger Value => 18

========== Sample 2 output ==========
OPTION_01 => true
OPTION_02 => true
OPTION_03 => true
OPTION_04 => false
OPTION_05 => true
Get Trigger Value => 23

========== Sample 3 output ==========
OPTION_01 => true
OPTION_02 => true
OPTION_03 => true
OPTION_04 => false
OPTION_05 => true
turn to Int Value => 23
```