

2024/01/05 當天

第一題: 順序探討

```
1 class t {
2     static int a=1;           //(1)
3     int b=0;                  //(2)
4
5     static {a=2;}             //(3)
6     t() { a=3; }              //(4)
7     { b=2; }                  //(5)
8 }
9 public class st extends t {
10     int c=2;                  //(6)
11     static { a=4; }           //(7)
12     st() { a=5; }             //(8)
13     { c=3; }                  //(9)
14     public static void main(String[] args) {
15         st b=new st();        //(10)
16
17 }
```

```
/* 2024/01/05 楊育哲
 * 實作第一題: 順序探討
 */
public class st extends t{
    int c=2;//6
    static { System.out.println(a);a=4; }//7
    st(){ System.out.println(a+" "+c);a=5; }//8
    { System.out.println(a+" "+c);c=3; }//9
    public static void main(String args[]){
        st b=new st();//10
    }
}
```

```

class t{
    static int a=1;//1
    int b=0;//2
    static { System.out.println(a);a=2; }//3
    t(){ System.out.println(a+" "+b);a=3; }//4
    { System.out.println(a+" "+b);b=2; }//5
}
// 10, 1, 3, 7, 2, 5, 4, 6, 9, 8

```

輸出:

```

1
2
4 0
4 2
3 2
3 3

```

說明: 順序10→1→3→7→2→5→4→6→9→8, 10結束

第二題:

- (1)依照右下方程式範例(共 17 行)，決定出註解處程式被執行的先後順序， //(1), //(2),, //(10)
- (2)修改類別 Taiwan (參考 12/29 上課練習第 1 題)，並用下列三種方式限制 Taiwan 類別只能產生出一個物件，並在主程式證明你做到了這件事
- (a)靜態區塊 static block, (b)類別函式 static function, (c) inner class, 共三種不同方式，限制此類別只能建立出一個物件
- (3)利用內部類別、以及類別繼承方式，為一家百貨銷售商設計出一些類別，可以依照不同的顧客:一般顧客、會員、VIP，
- (a)提供不同的貨品價格、
 - (b)以及享有不同的服務，例如：特定貨品只有會員以上、甚至VIP以上身份才可以預訂，參考附件的 products.txt 檔，寫出一個主程式來展示你的設計。

使用A方式: (static block)

```

/* 2024/01/05 楊育哲
 * 實作第二題：建構式設計樣式練習，使用A方式(static block)
 */
public class h2_0105_a {
    public static void main(String args[]){
        Taiwan tw = Taiwan.getInstance();
        tw.showInfo();
        Taiwan tw2 = Taiwan.getInstance();
        System.out.println(tw.equals(tw2));
    }
}

```

```

}
class Country{
    String name;
    double population, groundSize, GDP;
    Country(double p, double g, double G){ population=p;groundSize=g;GDP=G;}
    public void showInfo(){ System.out.println(name+"'s population: "+population+" groundSize: "+groundSize+" GDP: "+GDP);}
}
class Taiwan extends Country{
    private Taiwan(double p, double g, double G){super(p, g, G);}
    private static Taiwan instance;
    static {
        try{
            instance = new Taiwan(23.26, 36197, 775);
        }catch(Exception e){
            throw new RuntimeException("Exception occurred in static block");
        }
    }
    public static Taiwan getInstance(){ return instance; }
    public void showInfo(){ System.out.println("Taiwan's population: "+population+" groundSize: "+groundSize+" GDP: "+GDP);}
}

```

輸出:

Taiwan's population:23.26m, groundSize:36197.0km^2, GDP:775.0m

true

說明: true表示tw equals tw2, 即兩者為同一物件, 得證

使用B方式: (static function)

```

/* 2024/01/05 楊育哲
 * 實作第二題: 建構式設計樣式練習, 使用B方式(static function)
 */
public class h2_0105_b {
    public static void main(String args[]){
        Taiwan tw = Taiwan.getInstance();
        tw.showInfo();
        Taiwan tw2 = Taiwan.getInstance();
        System.out.println(tw.equals(tw2));
    }
}

```

```

}
class Country{
    String name;
    double population, groundSize, GDP;
    Country(double p, double g, double G){ population=p;groundSize=g;GDP=G;}
    public void showInfo(){ System.out.println(name+"'s population: "+population+", groundSize: "+groundSize+", GDP: "+GDP);}
}
class Taiwan extends Country{
    private Taiwan(double p, double g, double G){super(p, g, G);}
    private static Taiwan instance;
    public static Taiwan getInstance(){
        if(instance==null){
            instance = new Taiwan(23.26, 36197, 775);
        }
        return instance;
    }
    public void showInfo(){ System.out.println("Taiwan's population: "+population+", groundSize: "+groundSize+", GDP: "+GDP);}
}

```

輸出:

Taiwan's population:23.26m, groundSize:36197.0km^2, GDP:775.0m
true

說明: 同A, true表示tw equals tw2, 即兩者為同一物件, 得證

使用C方式: (inner class)

```

/* 2024/01/05 楊育哲
 * 實作第二題: 建構式設計樣式練習, 使用C方式(inner class)
 */
public class h2_0105_c {
    public static void main(String args[]){
        Taiwan tw = Taiwan.getInstance();
        tw.showInfo();
        Taiwan tw2 = Taiwan.getInstance();
        System.out.println(tw.equals(tw2));
    }
}
class Country{

```

```

    String name;
    double population, groundSize, GDP;
    Country(double p, double g, double G){ population=p;groundSize=g;GDP=G;}
    public void showInfo(){ System.out.println(name+"'s population: "+population+", groundSize: "+groundSize+"km^2, GDP: "+GDP+"m"); }
}

class Taiwan extends Country{
    private Taiwan(double p, double g, double G){super(p, g, G);}
    private static class SingletonHelper{//return時才呼叫建立
        private static final Taiwan INSTANCE = new Taiwan(23.26, 36197.0, 775.0);
    }
    public static Taiwan getInstance(){
        return SingletonHelper.INSTANCE;
    }
    public void showInfo(){ System.out.println("Taiwan's population: 23.26m, groundSize: 36197.0km^2, GDP: 775.0m"); }
}

```

輸出:

Taiwan's population:23.26m, groundSize:36197.0km^2, GDP:775.0m
true

說明: 同AB, ture表示tw equals tw2, 即兩者為同一物件，得證