實作輔導 4

- 日期: 4/21（星期六） 13:10~16:00
- 地點:臺北市立大學　臺北市中正區愛國西路一號 (中正紀念堂站7號出口)
- 公誠樓三樓 G316 電腦教室(資訊科學系)
- 可自行攜帶筆電
- 目標:協助習題、安裝java 環境、path設定
- 參加者:請email 給laiahfur@gmail.com 或直接到輔導地點

- 下次預定:

搶答!!

Q1：印出結果?

```
int n = 7, i=0;
 while (i<n) {
   System.out.print(i);
   i++;}
 System.out.println(", i="+i);
```

Q2：印出結果?

```
n = 7; i=0;//已宣告
 while (i<n) {
   i++;
   System.out.print(i);
   }
 System.out.println(" ,i="+i);
```

Q3：印出結果?

```
n = 7; i=0;
while (i<n) {
  n--;
  System.out.print(i);
  }
System.out.println(" ,i="+i);
```

Q4：印出結果?

```
int a, b;
 a=b=11;
 i=0;
 while (a>=b) {
        ++i;
        a--;
  }//while
 System.out.println("i="+i+" a="+a);
```

Q5：印出結果?

```
a=b=13;
 i=0;
 while (a>5 && a<9) {
        ++i;
        a--;
  }//while
 System.out.println("i="+i+" a="+a);
```

Q6 :Debug

```
import java.util.Scanner;
public class scorerank_error {
  public static void main(String[] args) {
    Scanner input = new Scanner(System.in);
    int score = 0;
    while (score>=0) {
      System.out.print("輸入分數(整數)：");
      score = input.nextInt();
        if (score >= 0) {
                //將分數除10，由於是int除int，所以結果仍為int(10~0)。
                switch (score / 10) {
                        //由於100~90都為(10~9)優等，因此兩case印出相同
                        case 10:
                        case 9:
                                System.out.print("等第：優\n");
                        case 8:
                                System.out.print("等第：甲\n");
                        case 7:
                                System.out.print("等第：乙\n");
                        case 6:
                                System.out.print("等第：丙\n");
                        case 5:
                                System.out.print("等第：丁\n");
                        case 4:
                                System.out.print("等第：戊\n");
                        case 3:
                                System.out.print("等第：己\n");
                        case 2:
                                System.out.print("等第：庚\n");
                        case 1:
                                System.out.print("等第：辛\n");
                        case 0: //由於9~0除10結果均為0，但9~1 & 0屬不同
                                if (score != 0)
                                        System.out.print("等第：壬\n");
                                else
                                        System.out.print("等第：癸\n");
                        default: //>100
                                System.out.print("無法判讀\n");
                      } //switch
         } //if
        else {
                System.out.print("bye\n");
                break;
        }//switch
    }//while
  }//main
}//class
```

- Bug在何處? Syntax error?
  - 請回答!!
- How to handle?
- Let’s compile & run

自我練習

```
0123456, i=7
1234567 ,i=7
0000000 ,i=0
i=1 a=10
i=0 a=13
```

```
public class challenge {
public static void main(String[] args) {
  int n = 7, i=0;
  while (i<n) {
    System.out.print(i);
    i++;}
  System.out.println(", i="+i);
    n = 7; i=0;//已宣告
  while (i<n) {
    i++;
    System.out.print(i);
    }
  System.out.println(" ,i="+i);
  n = 7; i=0;
  while (i<n) {
    n--;
    System.out.print(i);
    }
  System.out.println(" ,i="+i);
  int a, b;
    a=b=11;
    i=0;
    while (a>=b) {
       ++i;
       a--;
     }//while
    System.out.println("i="+i+" a="+a);
    a=b=13;
    i=0;
    while (a>5 && a<9) {
       ++i;
            a--;
     }//while
    System.out.println("i="+i+" a="+a);
 }//main
}//class
```

迴圈:
for,　do....while

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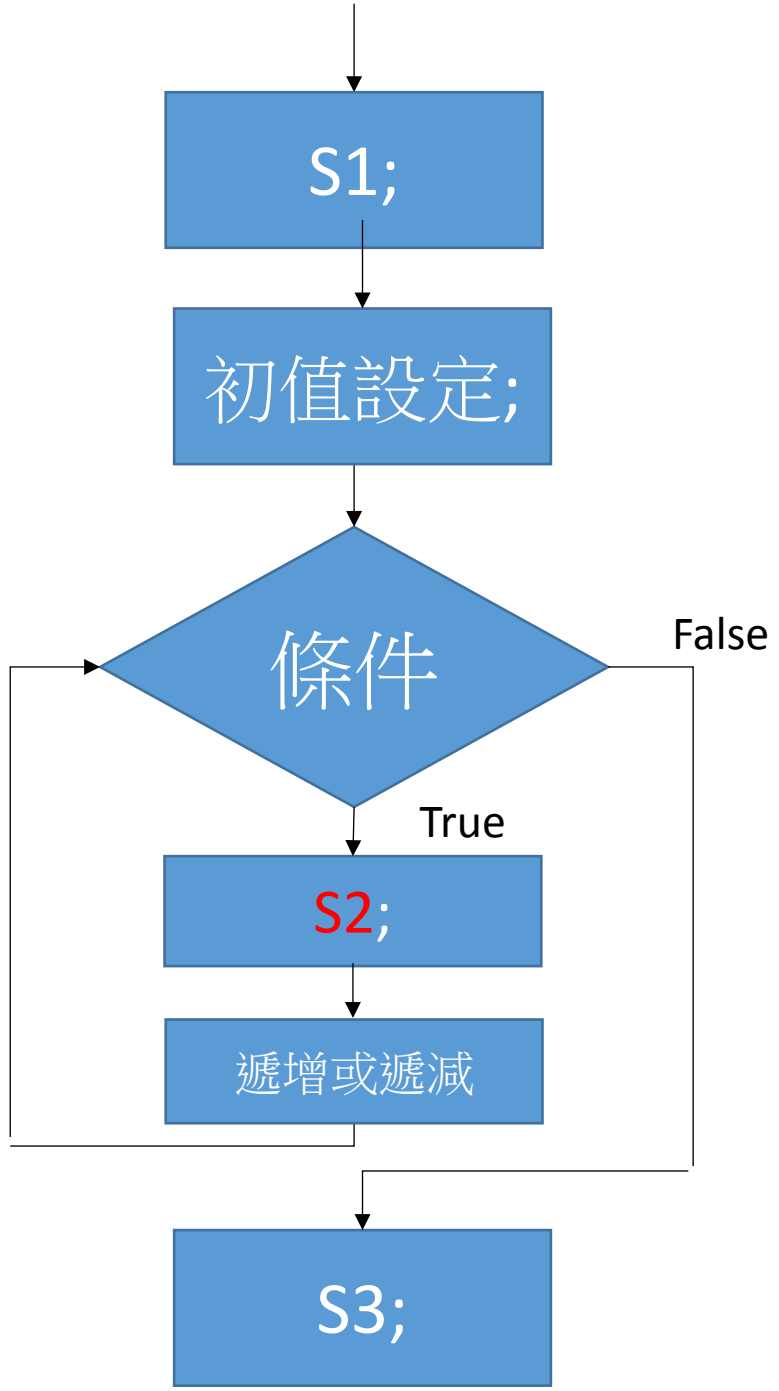
for迴圈

```
S1;
For(初值設定;條件;遞增或遞減)
 {
  s2;
 }
S3;
```

For loop body

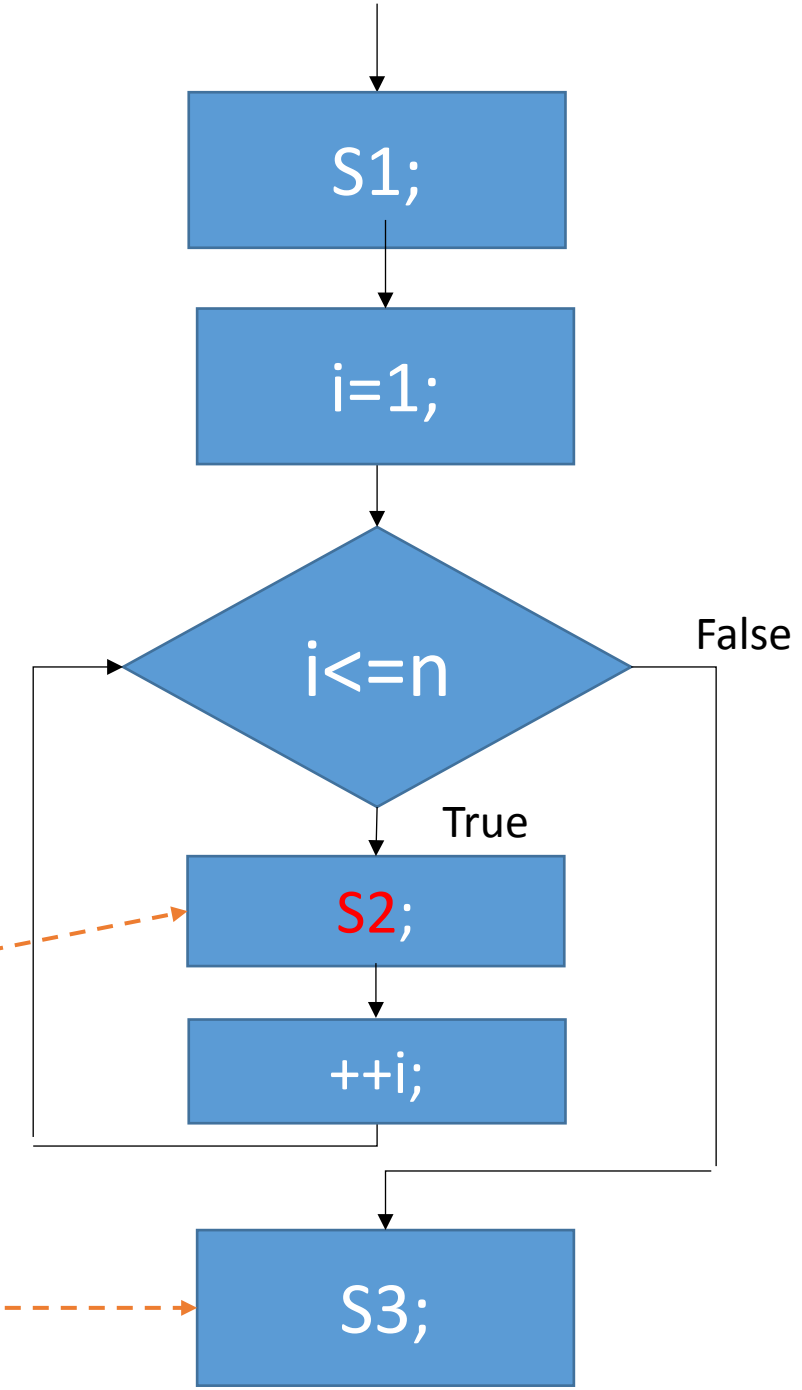


for迴圈

```
S1;
For(初值設定;條件;遞增或遞減)
 {
  s2;
 }
S3;
```

For loop **body**

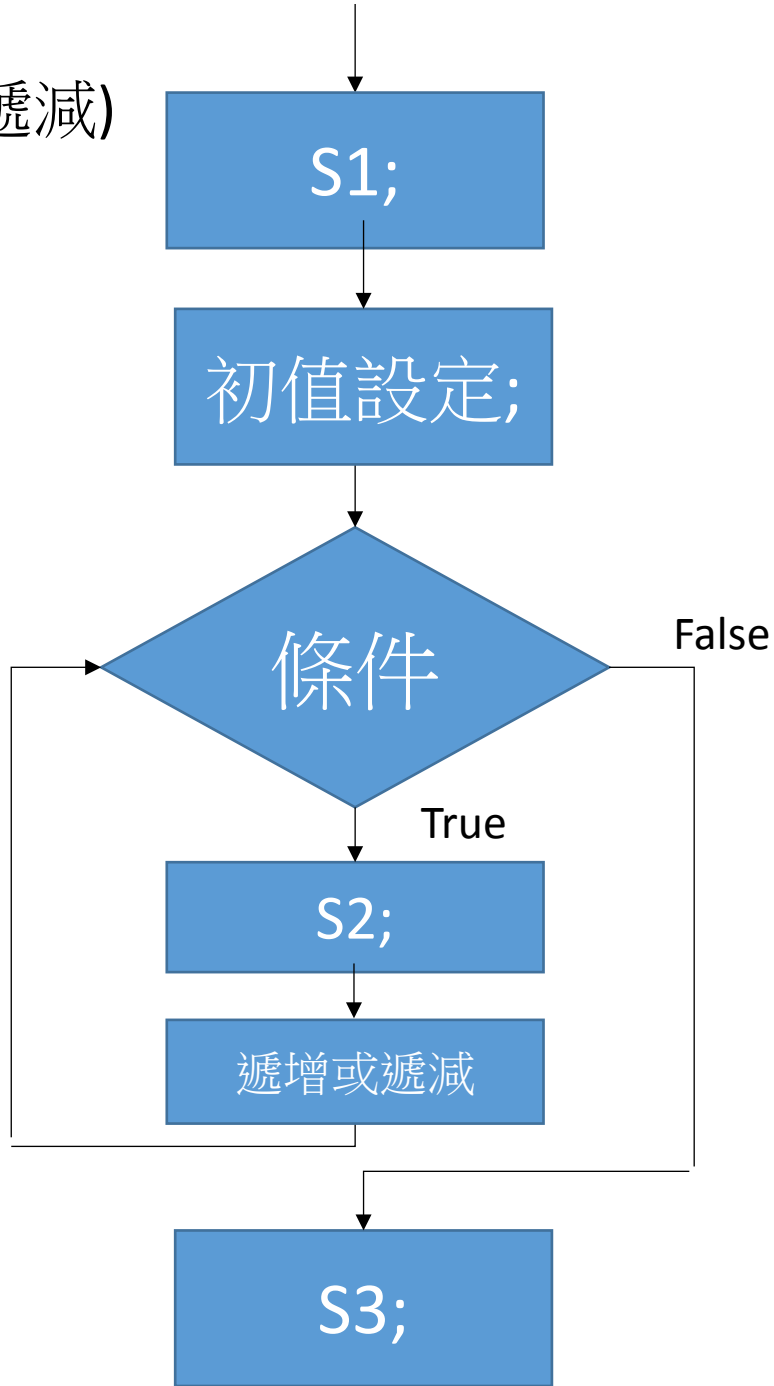
```
n = input.nextInt();
for(i=1;i<=n;++i) {
  System.out.println(“i="+i);
}
 System.out.println(“i="+i);
```



for迴圈:印1~n

```
n = input.nextInt();
for(i=1;i<=n;++i) {
  System.out.println(“i="+i);
}
System.out.println(“i="+i);
//印出多少??
```

```
S1;
for(初值設定;條件;遞增或遞減)
 {
   s2;
   s3;
 }
S4;
```



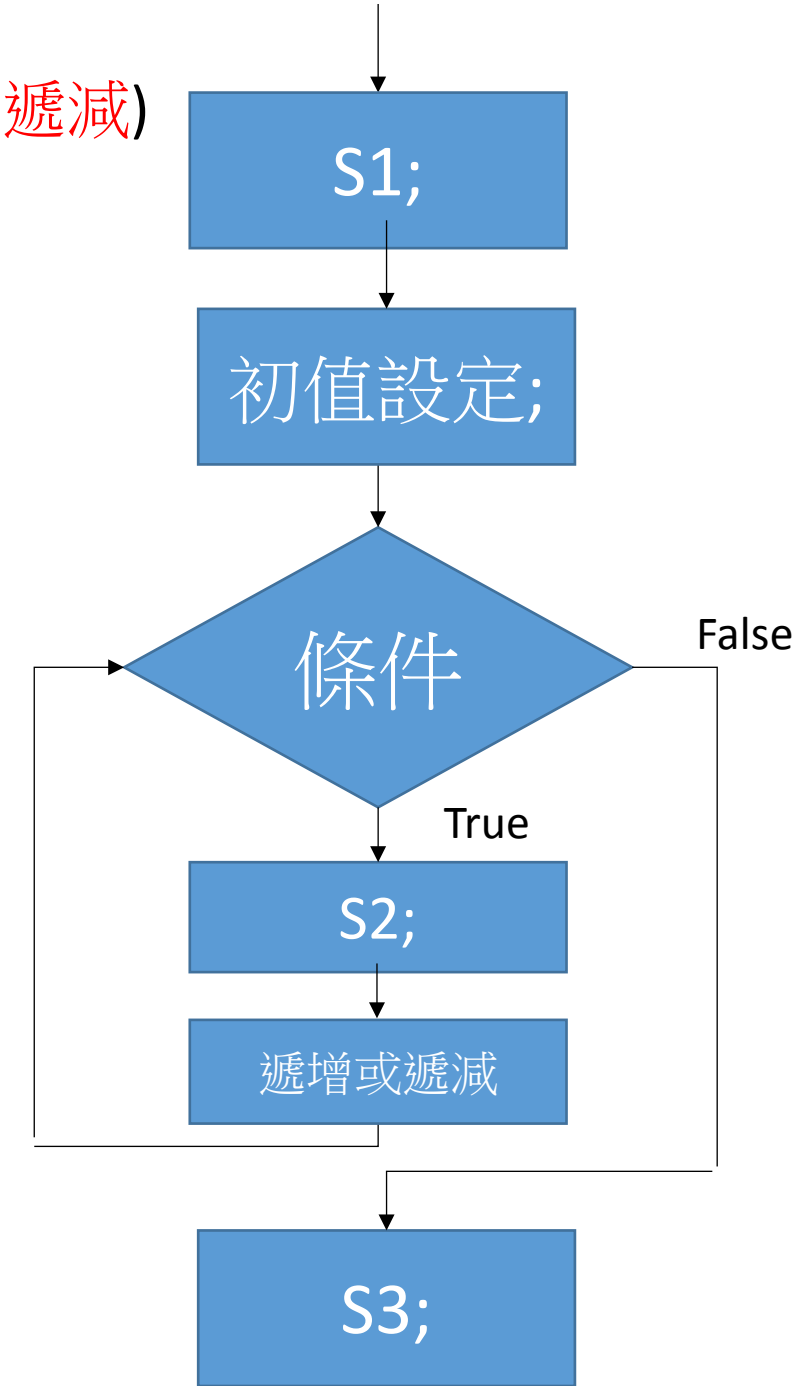

```
n = input.nextInt();
i=1;
for(;i<=n;) {
  System.out.println(“i="+i);
  ++i; //i=i+1;
}
System.out.println(“i="+i); //印出多少??
```

不同形式

for迴圈:印n~1

```
n = input.nextInt();
for(i=n;i>=1;--i) {
  System.out.println(“i="+i);
}
System.out.println(“i="+i);
//印出多少??
```

```
S1;
For(初值設定;條件;遞增或遞減)
 {
   s2;
   s3;
 }
S4;
```




```
n = input.nextInt();
i=n;
for(;i>=1;) {
  System.out.println(“i="+i);
  --i; //i=i-1;
}
System.out.println(“i="+i); //印出多少??
```

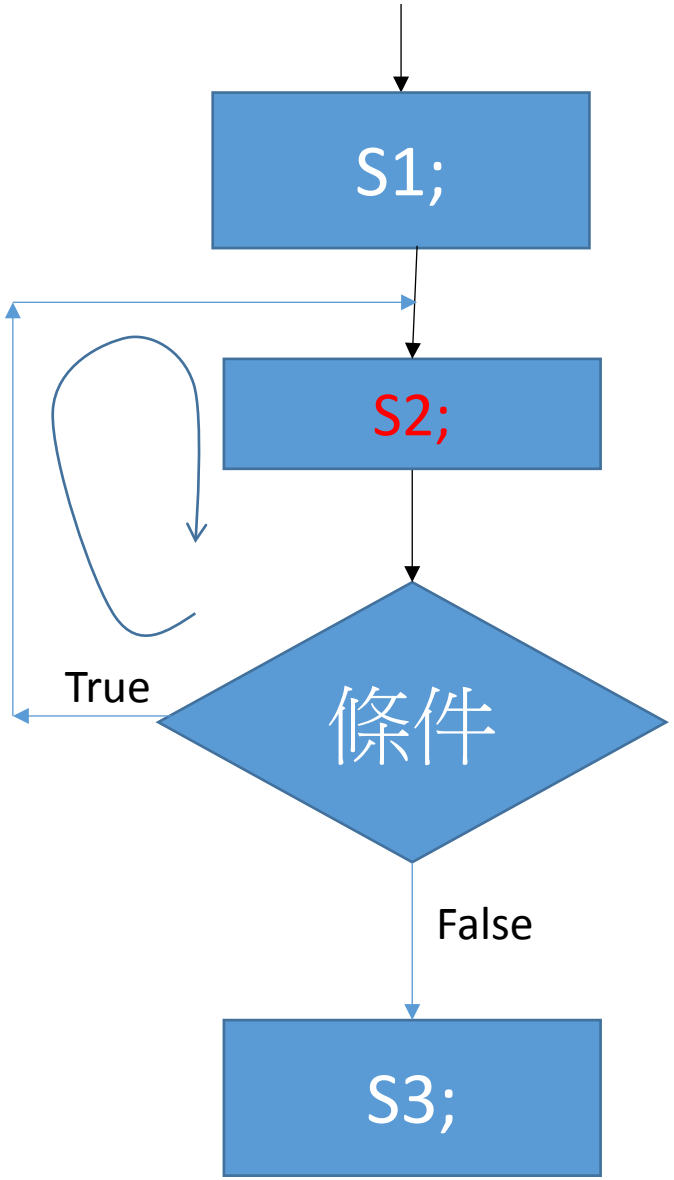
Do.. While ();迴圈

```
S1;
do  {

      s2;


  } while (條件);
S3;
```

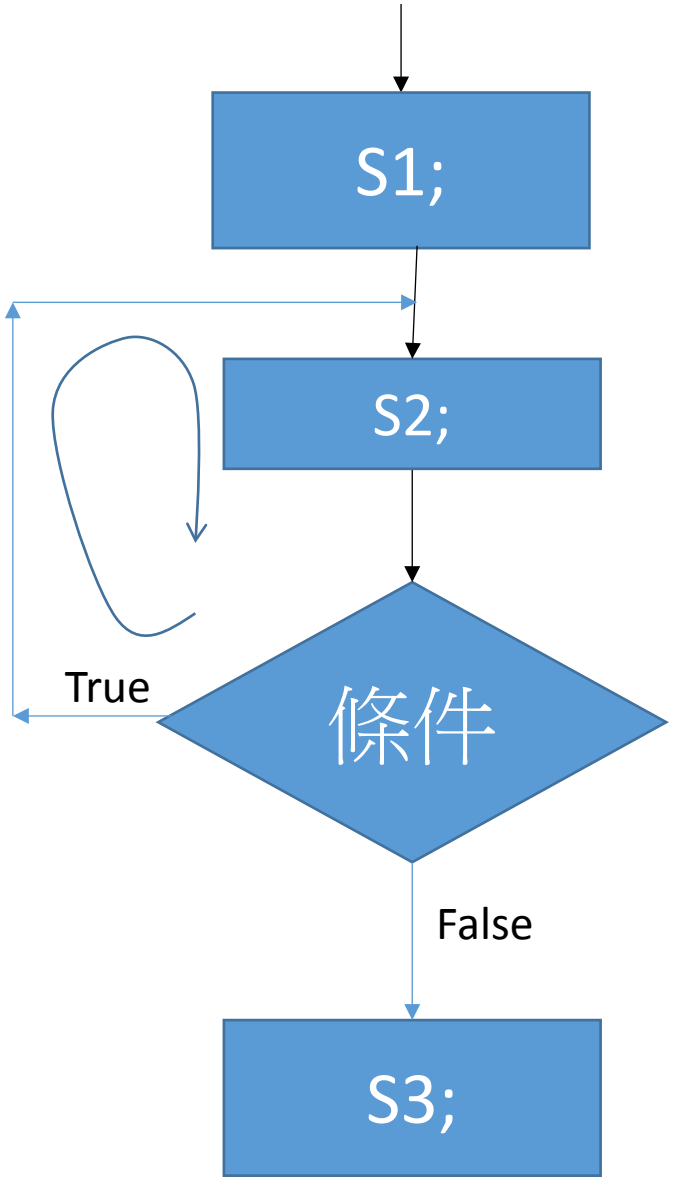
Do while loop body



Do.. While ();迴圈
印1~10

```
S1;
do  {
     s2;
  } while (條件);
S3;
```

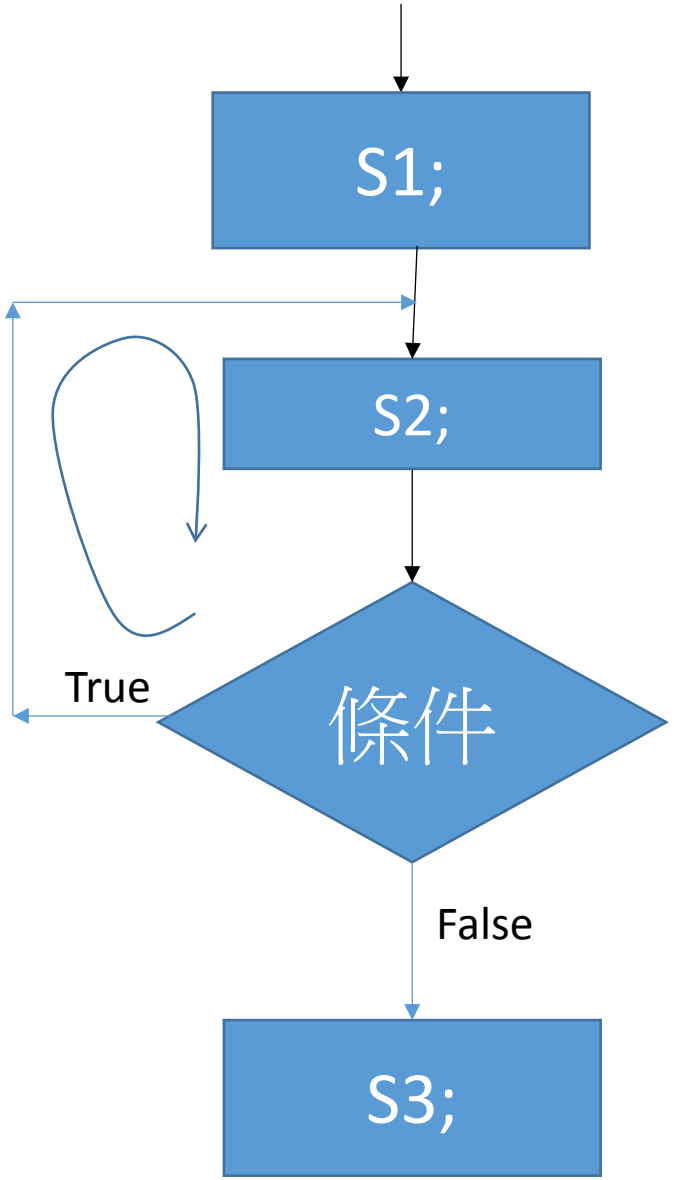
```
i=1;
do {
   System.out.println(“i="+i);
   i++;
} while (i<=10) ;
System.out.println(“i=”+i); //印出多少??
```



Do.. While ();迴圈
印1~n

```
S1;
do  {
     s2;
  } while (條件);
S3;
```

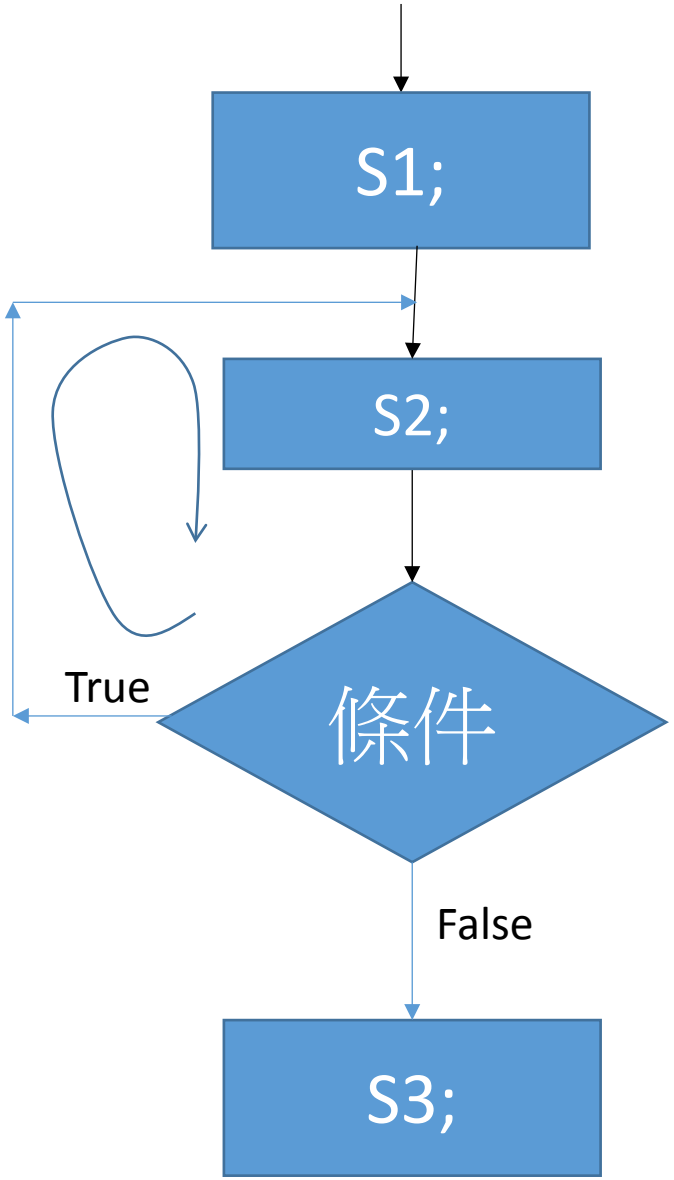
```
n = input.nextInt();
i=1;
do {
   System.out.println(“i="+i);
   i++;
} while (i<=n) ;
System.out.println(“i="+i); //印出多少??
```



Do.. While ();迴圈
印1~10

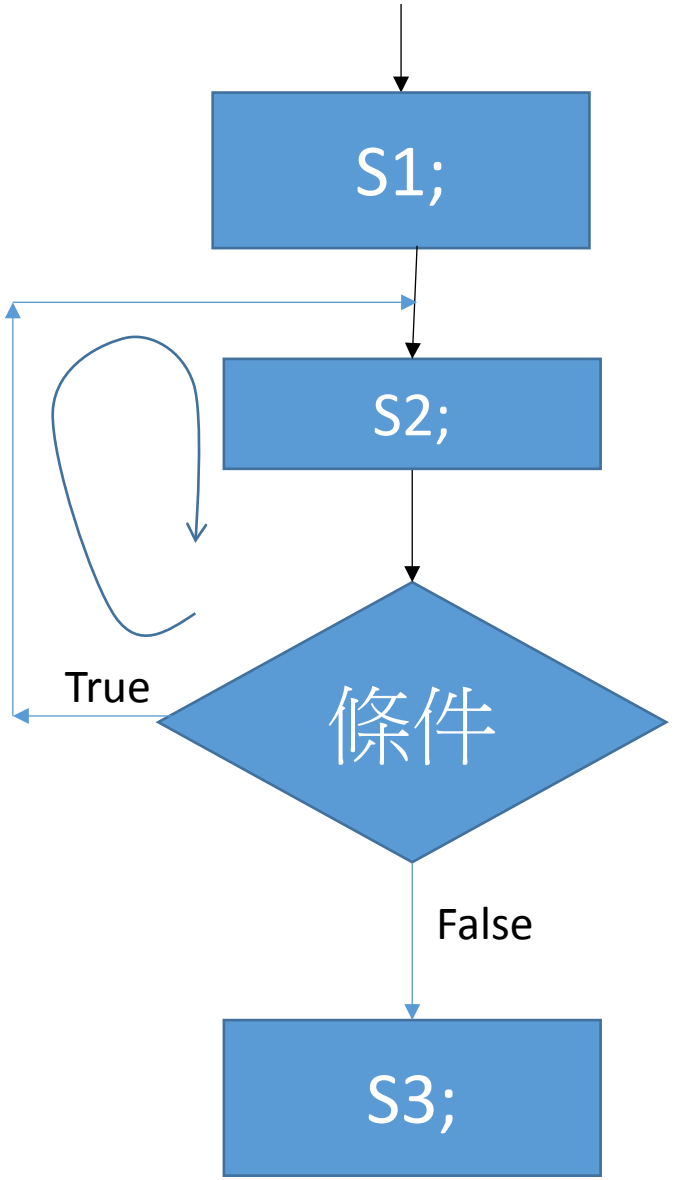
```
S1;
do  {
     s2;
  } while (條件);
S3;
```

```
i=0;
do {
    i++;
   System.out.println(“i="+i);
} while (i<10) ;
System.out.println(“i="+i); //印出多少??
```



Do.. While ();迴圈
印1~n

```
S1;
do  {
     s2;
  } while (條件);
S3;
```




```
n = input.nextInt();
i=0;
do {
    i++;
   System.out.println(“i="+i);
} while (i<n) ;
System.out.println(“i="+i); //印出多少??
```

比較三種迴圈

- Trace all_loop_0.java
  - 印1~n

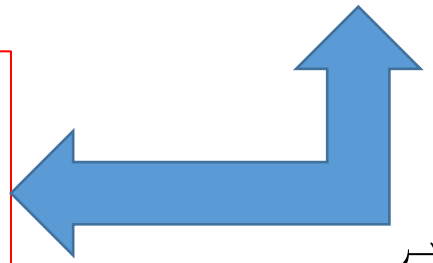
運用三種迴圈解 S=1+2+….+n

For迴圈與while迴圈對等: S=1+2+....+n

```
n = input.nextInt();
s= 0;
For(i=1;i<=n; i++ )
    s=s+i;
System.out.println("1+2+...+"+n+"="+s);
```

```
n = input.nextInt();
s= 0; i=1;
for(;i<=n;) {
    s=s+i; i++; }
System.out.println("1+2+...+"+n+"="+s);
```

```
n = input.nextInt();
s=0; i=0;
while (i<=n) {
  s=s+i;
  i++;}
System.out.println("1+2+...+"+n+"="+s);
```



完成對等
equivalence

For迴圈之不同形式

```
n = input.nextInt();
s= 0;
For(i=1;i<=n; i++ )// ++i
    s=s+i;
System.out.println("1+2+...+"+n+"="+s);
```

```
n = input.nextInt();
s= 0; i=1;
for(;i<=n; s=s+i, i++ )
    ;
System.out.println("1+2+...+"+n+"="+s
);
```

```
n = input.nextInt();
s= 0; i=1;
for(;i<=n;) {
    s=s+i; i++; }
System.out.println("1+2+...+"+n+"="+s);
```

```
n = input.nextInt();
s= 0; i=1;
for(;i<=n;s=s+i++)
    ;
System.out.println("1+2+...+"+n+"="+s
);
```

遞增或遞減

```
i=i+1;
++i;
i++;
i+=1;
s=s+i++;
s=s+(++i);
```

```
i=i-1;
--i;
i--;
i-=1;
s=s+i--;
s=s+(--i);
```

完成對等??

比較遞增:

```
i=1;
s=10;
s=s+i++;
System.out.println(s);
System.out.println(i);
```

11

2

```
s=s+i;
i=i+1;
```

```
i=1;
s=10;
s=s+(++i);
System.out.println(s);
System.out.println(i);
```

12

2

```
i=i+1;
s=s+i;
```

比較遞減

```
i=1;
s=10;
s=s+i--;
 System.out.println(s);
```

?

搶答

```
i=1;
s=10;
s=s+(--i);
System.out.println(s);
```

?

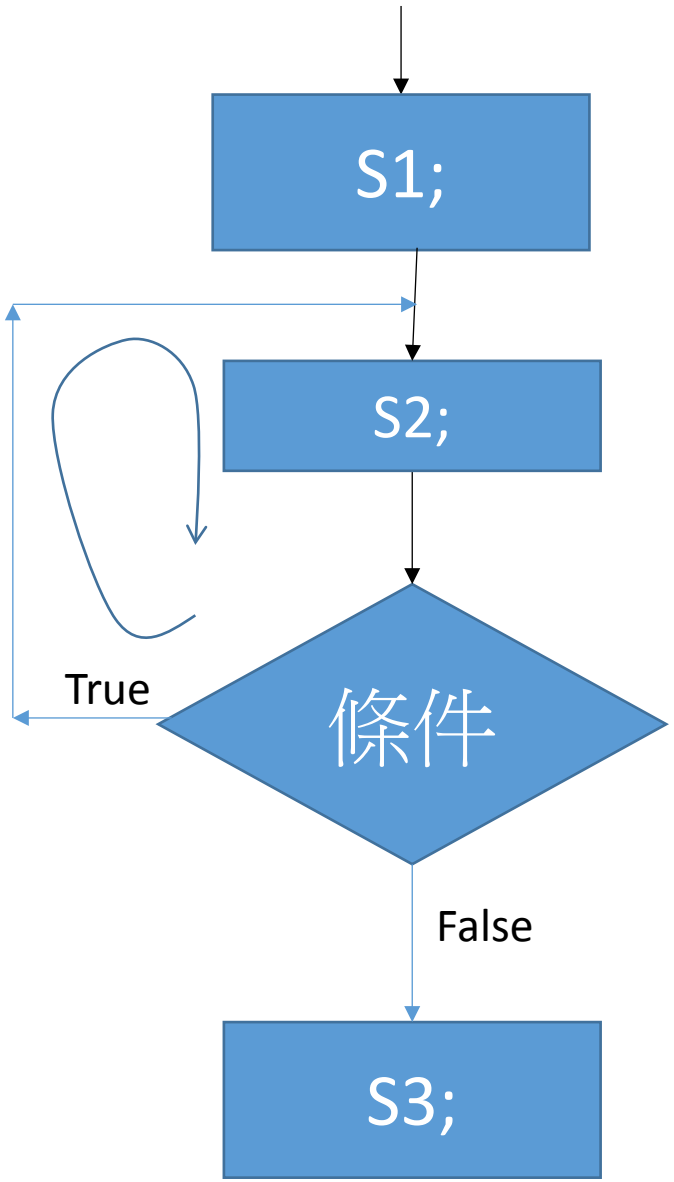
搶答

Do.. While ();迴圈

S=1+2+....+n

```
S1;
do  {
     s2;
  } while (條件);
S3;
```

```
n = input.nextInt();
i=1;
s=0;
do {
      s=s+i;
      i++;
    }while (i<=n);
System.out.println("1+2+...+"+n+"="+s);
```



Debug :輸入奇數n,求S=1+3+5+.....+n

```
1.import java.util.Scanner;
2.public class loop_debug_1 {
3.  public static void main(String[] args) {
4.    Scanner input = new Scanner(System.in);
5.    int n=7,i=0, s=0;
6.    System.out.println("輸入奇數n,求S=1+3+5+.....+n\n");
7.    while (n>=1) {
8.    System.out.print("輸入奇數(-1:end)：");
9.    n = input.nextInt();
10.  for(i=1;i<=n;++i)
11.       s=s+i;
12.    System.out.println("1+3+5+...+"+n+"="+s);
13.   }//while
14.
15.         }//main
16.}//class
```

搶答:

那些錯誤?如何修?

寫出編號及**修改結果**

Debug :輸入奇數n,求S=1+3+5+.....+n

```
1.import java.util.Scanner;
2.public class loop_debug_1 {
3.  public static void main(String[] args) {
4.    Scanner input = new Scanner(System.in);
5.    int n=7,i=0, s=0;
6.    System.out.println("輸入奇數n,求S=1+3+5+.....+n\n");
7.    while (n>=1) {
8.    System.out.print("輸入奇數(-1:end)：");
9.    n = input.nextInt();
10.    if (n%2==0) {
11.      System.out.println("輸入錯誤，須為奇數!");
12.      continue;}
13.    for(i=1;i<=n;++i)
14.       s=s+i;
15.    System.out.println("1+3+5+...+"+n+"="+s);
16.   }//while
17.
18.                }//main
19.}//class
```

處理輸入錯誤

追蹤for loop

```
int n=7;
 for(i=1;i<=n;++i) {
       s=s+i;
       ++i; }
    System.out.println(“s"="+s);
```

搶答:

Debug :輸入整數n,求S= 1*2*3*.....*n

```
1.  import java.util.Scanner;
2.  public class all_loop_1 {
3.    public static void main(String[] args) {
4.      Scanner input = new Scanner(System.in);
5.      int n=7,i=0;
6.      int s=0;
7.      System.out.println("輸入整數n,求S=1*2*3*.....*n\n");
8.      while (n>=1) {
9.      System.out.print("輸入整數(-1:end)： ");
10.     n = input.nextInt();
11.     for(i=1;i<=n;++i)
12.       s=s*i;
13.     System.out.println("1*2*3*...*"+n+"="+s);
14.    }//while
15.   }//main
16. }//class
```

搶答:

那些錯誤?如何修?

寫出編號及**修改結果**

第9周習題: 共二題(全部要完成)

- 9-1: 三種迴圈解s=1*2+3*4+……..+n*(n+1)
  - 輸入n(奇數)， 求s=1*2+3*4+5*6+……..+n*(n+1)
    - 輸入錯誤(如4)，要求重新輸入
    - 輸入n後，分別以while, do..while, for 等三種迴圈求s
    - 放置於同一.java
    - 使用者可重複輸入，直到輸入<=0或回答N，才結束程式
  - 繳交”設計歷程”檔及.java
- 9-2:三種迴圈解s=1*2+2*3+……..+n*(n+1)
  - 輸入n， 求s=1*2+2*3+3*4+……..+n*(n+1)
    - 輸入n後，分別以while, do..while, for 等三種迴圈求s
    - 放置於同一.java
    - 使用者可重複輸入，直到輸入<=0或回答N，才結束程式
  - 繳交”設計歷程”檔及.java

Review

switch case

改為5等第

```
import java.util.Scanner;
public class scorerank_2a {
  public static void main(String[] args) {
    Scanner input = new Scanner(System.in);
    int score = 0;
    while (score>=0) {
      System.out.print("輸入分數(整數>=0)：");
      score = input.nextInt();
      if (score<0) break;
      //100~90優 89~80甲 79~70乙 69~60丙 59~0丁
      switch (score / 10) {
        case 10:
        case 9:
                System.out.print("等第：優\n");
                break;//結束執行,break switch判斷;
        case 8:
                System.out.print("等第：甲\n");
                break;
        case 7:
                System.out.print("等第：乙\n");
                break;
        case 6:
                System.out.print("等第：丙\n");
                break;
        case 5:
        case 4:
        case 3:
        case 2:
        case 1:
        case 0:
                System.out.print("等第：丁\n");
                break;
        default:
                System.out.print("無法判讀\n");
                break;
                    } //switch
      }//while
  }//main
}//class
```

改變運算式

- (score-50)/10

```
import java.util.Scanner;
public class scorerank_2b {
  public static void main(String[] args) {
    Scanner input = new Scanner(System.in);
    int score = 0;
    while (score>=0) {
      System.out.print("輸入分數(整數>=0)：");
      score = input.nextInt();
      if (score<0)
         {System.out.print("Bye\n");break;}
      //100~90優 89~80甲 79~70乙 69~60丙 59~0丁
      if (score<=100 && score>=0) {
      switch ((score-50)/10) {
        case 5:
        case 4:
                System.out.print("等第：優\n");
                break;//結束執行,break switch判斷;
        case 3:
                System.out.print("等第：甲\n");
                break;
        case 2:
                System.out.print("等第：乙\n");
                break;
        case 1:
                System.out.print("等第：丙\n");
                break;
        case 0:
        default:
                System.out.print("等第：丁\n");
                break;
                    } //switch
       }
    else
       System.out.print("超過範圍\n");
        }//while
  }//main
}//class
```

主題：字元金字塔 - 斜金字塔

- 利用迴圈印出「*」，逐行增加印出個數，直到印出7層斜金字塔。
- 本題利用到巢狀迴圈的概念
- 巢狀迴圈為迴圈範圍內又有迴圈，從外層來看，內層迴圈只屬與外層迴圈內的動作。因此外層迴作用，內層迴圈開始運作到執行結束後，又回到外層迴圈。

```
public class Charstar1 {
    public static void main(String[] args) {
        //變數level為金字塔的層數
        int level = 7;

        //for迴圈 直到印完 level行結束金字塔
        //外圍迴圈i為當下的層數，i增加即為換層
        for (int i = 1; i <= level; i++) {
            //第i列時，印出i個*
            //j為當下的星星個數，每列都從1個開始印
            for (int j = 1; j <= i; j++)
                System.out.print("*");

            //每層結束換行
            System.out.println("");
        }
    }
}
```

執行結果

```
*
**
***
****
*****
******
*******
```