

**Swift loop**

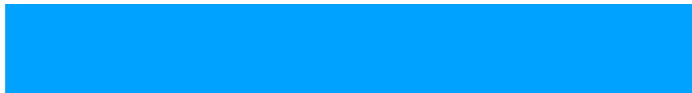
**for** 迴圈使用變數number列舉陣列中的儲存內容，依序代入迴圈，進行迭代運算。本題陣列變數index存儲5個整數，請在for迴圈指令中，使用變數number，列舉陣列index內容，進行迴圈迭代運算

**The for loop uses the variable number to list the stored contents in the array, and then substitutes them into the loop in order to perform iterative operations. The array variable index in this question stores 5 integers. Please use the variable number in the for loop instruction to list the contents of the array index and perform loop iteration operations.**

```
1 import UIKit
2
3 var index = 1...5
4 for [REDACTED] {
5     print(number*number)
6 }
```

陣列變數index儲存5個整數，for迴圈指令使用變數number列舉index陣列內容，如何設計迴圈的主體指令，進行index陣列的數字加總呢？而且以變數sum儲存加總結果。

The array variable index stores 5 integers. The for loop instruction uses the variable number to list the contents of the index array. How to design the main instruction of the loop to add up the numbers in the index array? And the summation result is stored in the variable sum.

```
1 import UIKit
2
3 var index = 1...5
4 var sum = 0
5 for number in index{
6     
7 }
8 print(sum)|
```

在for迴圈指令中，使用numStart與numEnd設計閉區間，指定變數number的範圍，印出4個數字，如輸出視窗所示

In the for loop instruction, use numStart and numEnd to design a closed interval, specify the range of the variable number, and print out 4 numbers, as shown in the output window

```
1 import UIKit
2
3 let numEnd = 5
4 let numStart = 2
5 {
6     print(number)
7 }
```



```
5 (
2 (
(4 ti... (
```



```
2
3
4
5
```

在for迴圈指令中，使用numStart與numEnd設計半閉區間，指定變數number的範圍，印出3個數字，如輸出視窗所示

In the for loop instruction, use numStart and numEnd to design a semi-closed interval, specify the range of the variable number, and print out 3 numbers, as shown in the output window

```
1 import UIKit
2
3 let numEnd = 5
4 let numStart = 2
5 for number in numStart..
```

5

2

(3 ti...




2

3

4

陣列變數x儲存5個數字，for迴圈指令以變數number列舉陣列x中的所有數字，依序代入迴圈。如何設計迴圈主體運算，將陣列x中的數字依序加總至變數su?

The array variable x stores 5 numbers. The for loop instruction uses the variable number to list all the numbers in the array x and substitute them into the loop in order. How to design the loop body operation to sequentially add the numbers in the array x to the variable su?

```
1 import UIKit
2
3 var x = [1, 2, 8, 4, 5]
4 var su = 0
5 for number in x{
6     
7 }
8 print(su)
```

```
[1, 2, 8, 4, 5]
0
(5 times)
"20\n"
```

本題透過for迴圈列舉字串陣列deepNN中的字串，請在for迴圈指令中，以變數layer依序列舉deepNN各個字串。

This question uses a for loop to enumerate the strings in the string array deepNN. In the for loop command, please use the variable layer to enumerate each string of deepNN in sequence.

```
1 import UIKit
2
3 var deepNN = ["input", "hidden1", "hidden2", "output"]
4  {
5     print(layer)
6 }
```

第三行透過Array指令設定陣列變數tenDoubles，以repeating設置實數0.0，重複次數為10。請以類似指令設定陣列變數anotherTenVariables的內容，為包含10個實數1.5的陣列，成功設定後，for迴圈將進一步加總陣列中的所有數字，總和為15，如第九行右邊的變數內容所示

The third line sets the array variable tenDoubles through the Array command, sets the real number 0.0 with repeating, and the number of repetitions is 10. Please use a similar command to set the content of the array variable anotherTenVariables to an array containing 10 real numbers 1.5. After successful setting, the for loop will further add up all the numbers in the array, and the total is 15, such as the variable on the right side of the ninth line content shown

```
1 import UIKit
2
3 var tenDoubles = Array(repeating: 0.0, count: 10)
4 var [redacted]
5 var sum = 0.0
6 for number in anotherTenVariables{
7     sum += number
8 }
9 print(sum)
```

[0, 0, 0,...  
[1.5,...  
0  
(10 times)  
"15.0\n"



使用附加指令可以將兩個陣列，合併為一個陣列。tenDoubles和anotherTenVariables分別儲存10個數字，請使用附加指令，合併兩個數字陣列，並儲存在陣列變數twentyVariables中。經迴圈運算加總，得到總和35

Two arrays can be combined into one array using additional instructions. tenDoubles and anotherTenVariables store 10 numbers respectively. Please use additional instructions to merge the two number arrays and store them in the array variable twentyVariables. After adding up through loop operation, we get the total of 35

```
1 import UIKit
2
3 var tenDoubles = Array(repeating: 2.0, count: 10)
4 var anotherTenVariables = Array(repeating: 1.5, count: 10)
5 var twentyVariables = Array(repeating: 2.0, count: 10)
6 var sum = 0.0
7 for number in twentyVariables{
8     sum += number
9 }
10 print(sum)
```

[2, 2, 2,...  
[1.5,...  
[2, 2, 2,...  
0  
(20 times)  
"35.0\n"

**tuple(元組)**是以小括號將多重變數組合所形成的資料型態，例如，在for迴圈中，可以使用(index, layer)形成雙變數組合，列舉deepNN.enumerated()的內容。列舉結果，index儲存列舉的字串編號，而layer存儲列舉字串，依序代入迴圈中。請以雙變數組合(index, layer)，列舉deepNN的儲存內容。透過迴圈主體命令，將index和layer的列舉內容依序代入列印指令，印出結果，如輸出視窗所示。

**Tuple (tuple) is a data type formed by combining multiple variables with parentheses. For example, in a for loop, you can use (index, layer) to form a double variable combination and enumerate the contents of deepNN.enumerated(). For enumeration results, index stores the enumerated string number, and layer stores the enumerated string, which is substituted into the loop in order. Please use a double variable combination (index, layer) to list the storage content of deepNN. Through the loop body command, the listed contents of index and layer are substituted into the print command in order, and the result is printed, as shown in the output window.**

```
1 import UIKit
2
3 var deepNN = ["input", "conv", "ReLu", "pooling", "conv", "softMax"]
4 for (index, layer) in deepNN.enumerated() {
5     print("    layer "+String(index)+" is "+layer)
6 }
```



---

```
layer 0 is input
layer 1 is conv
layer 2 is ReLu
layer 3 is pooling
layer 4 is conv
layer 5 is softMax
```

maxLoopNum代表最大迴圈數，loop代表實際執行的迴圈數，未進入迴圈前，初始值為0。while迴圈指令需設計進入條件，請完成while迴圈指令設計，當迴圈執行20次後，因為loop的內容，使得進入條件不再成立，自動停止迴圈運算。

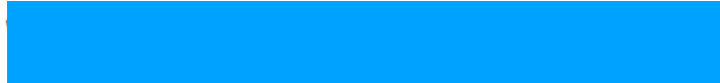
maxLoopNum represents the maximum number of loops, and loop represents the number of loops actually executed. Before entering the loop, the initial value is 0. The while loop instruction needs to design entry conditions. Please complete the design of the while loop instruction. After the loop is executed 20 times, the entry condition is no longer true due to the content of the loop, and the loop operation automatically stops.

```
1 import UIKit
2
3 let maxLoopNum = 20
4 var loop = 0
5                  {
6     loop += 1
7 }
8 print("        "+String(loop)+" loops completed")
```

20 loops completed

使用while迴圈產生等差數列，找出合法數列的最後一個數。numMax代表數列的上界，numStart代表起始數字，dis代表公差。請完成while迴圈設計，使得num代表合法數列的最後一個數

Use a while loop to generate an arithmetic sequence and find the last number in the legal sequence. numMax represents the upper bound of the sequence, numStart represents the starting number, and dis represents the tolerance. Please complete the while loop design so that num represents the last number of the legal sequence.

```
1 import UIKit
2
3 let numMax = 20
4 let numStart = 2
5 let dis = 3
6 var num = numStart
7  numMax{
8     num += dis
9 }
10 print("    the last number " + String(num) + " <= " + String(numMax))
```

使用while迴圈產生等差數列，找出合法數列的最後一個數。numMax代表數列的上界，numStart代表起始數字，dis代表公差，sizeMax代表最大數列個數。請完成while迴圈設計，使得num代表合法數列的最後一個數，請使用&&設計進入條件，包括判斷num與numMax的關係，及size與sizeMax間的關係

Use a while loop to generate an arithmetic sequence and find the last number in the legal sequence. numMax represents the upper bound of the sequence, numStart represents the starting number, dis represents the tolerance, and sizeMax represents the maximum number of sequences. Please complete the while loop design so that num represents the last number of the legal sequence. Please use && to design the entry conditions, including judging the relationship between num and numMax, and the relationship between size and sizeMax.

```
1 import UIKit
2
3 let numMax = 200
4 let numStart = 2
5 let dis = 7
6 let sizeMax = 25
7 var size = 0
8 var num = numStart
9 while (num <= numMax && size < sizeMax) {
10     size += 1
11     num += dis
12 }
13 print("size = " + String(size))
14 print(num)
```

200
2
7
25
0
2
(25 times)
(25 times)
"size = 25..."
"177\n"

☐ ☐

```
size = 25
177
```