Swift array

類神經網路的多層及深層結構，通常使用字串描述，適合於使用**swift**中的字串陣列儲存·宣告稱為**layers**的字串陣列，並將他的初始內容設定為空陣列·字串陣列使用的型態表示為，**[String]**·空陣列表示為 [ ]

The multi-layer and deep structures of neural networks are usually described using strings and are suitable for storage using string arrays in Swift. Declare a string array called layers and set its initial content to an empty array. The type used for string arrays is expressed as [String]. An empty array is represented as [ ]

```
1  import UIKit
2
3
```

字串陣列可儲存多個字串，而且每個字串的長度可以不一樣．使用附加運算 +=，可以將一個字串陣列附加到另一個字串陣列之後．請使用此附加運算，將字串陣列，["input"]，附加在字串陣列layers中

A string array can store multiple strings, and the length of each string can be different. One string array can be appended to another string array using the append operator +=. Please use this append operation to append the string array, ["input"], to the string array layers

```
1  import UIKit
2
3  var layers: [String] = []
4
5  print(layers)
```

字串陣列也可以使用append( )方法，附加特定字串·使用時，先寫下陣列變數名稱，再寫 .append( )，並將所要附加的字串寫在括號內·請使用上述方法將字串，"input"，附加在layers字串陣列中

String arrays can also use the append() method to append specific strings. When using it, first write the name of the array variable, then write .append(), and write the string to be appended in parentheses. Please use the above method to append the string, "input", to the layers string array.

```
1  import UIKit
2
3  var layers: [String] = []
4
5  print(layers)
```

多層類神經網路，包含輸入層，隱藏層，及輸出層．請使用附加運算 +=，以單一指令，將"input", "hidden", "output"等字串附加在字串陣列layers中

Multi-layer neural network, including input layer, hidden layer, and output layer. Please use the append operation += to append "input", "hidden", "output" and other strings to the string array layers in a single command.

```
1 import UIKit
2
3 var layers: [String] = []
4
5 print(layers)
```

使用**removeLast**方法，可以將字串陣列中的最後一個字串移除。先寫下字串陣列名稱，再寫上**.removeLast()**，即可將該字串陣列的最後一個字串移除

Use the removeLast method to remove the last string in the string array. First write the name of the string array, and then write .removeLast() to remove the last string of the string array.

```
1  import UIKit
2
3  var layers: [String] = []
4  layers += ["input","hidden","output"]
5
6  print(layers)
```

具備兩個隱藏層或兩個以上隱藏層的類神經網路，稱為深層類神經網路。請宣告稱為layers的字串陣列，並將初始內容設定為包含，"input"，"hidden1"，"hidden2"等字串，的字串陣列

A neural network with two hidden layers or more than two hidden layers is called a deep neural network. Please declare a string array called layers, and set the initial content to a string array containing "input", "hidden1", "hidden2" and other strings.

```
1  import UIKit
2
3
4  print(layers)
```

使用append()方法，將字串"output"，附加在字串陣列layers之後
Use the append() method to append the string "output" after the string array layers

```
1  import UIKit
2
3  var layers = ["input","hidden1","hidden2"]
4
5  print(layers)
```

字串陣列中的第1個字串的索引值為0．宣告一個稱為firstLayer的字串變數，將它的初始字串設定為字串陣列layers中的第一個字串
The index value of the first string in the string array is 0. Declare a string variable called firstLayer and set its initial string to the first string in the string array layers

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

宣告一個稱為myArray的整數陣列，並將初始內容設定為空陣列
Declare an array of integers called myArray and set the initial contents to an empty array

```
1  import UIKit
2
3
```

使用append方法，將整數0附加在myArray之後
Use the append method to append the integer 0 after myArray

```
1 import UIKit
2
3 var myArray = [Int]()
4
5 print(myArray)
```
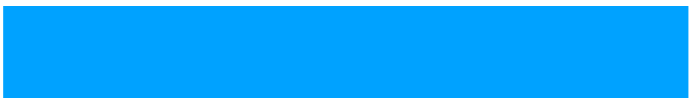
使用範圍指定，1...100，可以指定該範圍中的100個整數．使用附加運算+=，將myArray的儲存內容擴充為包含0到100的所有整數

Using range specification, 1...100, you can specify 100 integers in the range. Use the additional operation += to expand the storage content of myArray to include all integers from 0 to 100

```swift
1  import UIKit
2
3  var myArray = [Int]()
4  myArray.append(0)
5
6  print(myArray)
```

方法**count**可以計數陣列變數中的元素個數，使用時先寫下陣列變數，再寫下**.count**。請使用該方法印出**myArray**的元素個數

The method count can count the number of elements in the array variable. When using it, first write down the array variable, and then write down .count. Please use this method to print out the number of elements of myArray

```
1  import UIKit
2
3  var myArray = [Int]()
4  myArray.append(0)
5  myArray += 1...100
6  print(                    )
```

使用for指令可逐一列舉deepNN中的所有字串，進行迴圈運算．格式上，先寫for，接著寫列舉變數layer，最後寫in deepNN．該迴圈運算，可逐一將陣列中的字串代入layer中，進行運算．本題檢查陣列deepNN中是否包含字串，"conv"

Use the for instruction to enumerate all the strings in deepNN one by one and perform loop operations. In terms of format, first write for, then write enumeration variable layer, and finally write in deepNN. This loop operation can substitute the strings in the array into the layer one by one to perform operations. This question checks whether the array deepNN contains a string, "conv"

```
1  import UIKit
2
3  var deepNN = ["input","conv","hidden1","hidden2","output"]
4  let conv = "conv"
5  [                                ] {
6      if layer == conv {
7          print( "This is a Convolution Neural Network")
8      }
9  }
```

方法remove(at: Int)可將特定位置的元素從陣列中移除，嘗試使用該方法，將"hidden2"，從deepNN中移除

The method remove(at: Int) can remove the element at a specific position from the array. Try using this method to remove "hidden2" from deepNN

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