Swift if

if Bool 是最基本的條件運算指令．本題以布林變數evenNumber為運算條件，如果條件成立，則訊息列印

if Bool is the most basic conditional operation instruction. This question uses the Boolean variable evenNumber as the operation condition. If the condition is true, the message will be printed.

```
1 import UIKit
2
3 var evenNumber = true
4                       {
5     print("It is an even number")
6 }
```

rectify是深度學習中常用的非線性函數，如果輸入h > 0，輸出rectifyOutput的值與h相同，否則設定為0．請依照上述運算條件，完成if指令設計

Rectify is a nonlinear function commonly used in deep learning. If the input h > 0, the value of rectifyOutput is the same as h, otherwise it is set to 0. Please complete the if instruction design according to the above operation conditions.

```
1 import UIKit
2
3 var rectifyOutput = 0
4 var h = -2
5                {
6     rectifyOutput = h
7 }
8 print(rectifyOutput)
```

Threshold門檻函數，是離散型的非線性函數，如果輸入值h大於門檻值，輸出為1，否則為-1．使用if指令，完成門檻函數的設計

The threshold threshold function is a discrete nonlinear function. If the input value h is greater than the threshold value, the output is 1, otherwise it is -1. Use the if instruction to complete the design of the threshold function

```
1  import UIKit
2
3  var threshold = 0.0
4  var thresholdOutput = -1
5  var h = 1.5
6                              {
7      thresholdOutput = 1
8  }
9  print(thresholdOutput)
```

if else指令是常用的條件控制運算，以本題為例，如果x是2的倍數，則設定evenOdd為字串”even”，否則設定為字串”odd"．請完成指令設計

The if else instruction is a commonly used conditional control operation. Taking this question as an example, if x is a multiple of 2, set evenOdd to the string "even", otherwise set it to the string "odd". Please complete the instruction design

```
1  import UIKit
2  var x = 11
3  var evenOdd = ""
4                    {
5      evenOdd = "even"
6
7  } else
8  {
9      evenOdd = "odd"
10 }
11 print(String(x) + " is " + evenOdd)
```

if else if 允許進一步指定條件．bilinear 是深度學習中常用的非線性函數，本題首先將bilinear設定為x，第一個條件判斷x是否大於threshold1，寫在if之後，第二個條件進一步判斷x是否小於threshold2，寫在else if 之後
if else if allows further specification of conditions. Bilinear is a nonlinear function commonly used in deep learning. This question first sets bilinear to x. The first condition determines whether x is greater than threshold1 and is written after if. The second condition further determines whether x is less than threshold2 and is written in else if. after

```
import UIKit

var h = 0.5
var bilinear = h
let threshold1 = 1.0
let threshold2 = -1.0
if  h > threshold1 {
    bilinear = 1
}                                   {
    bilinear = -1
}
print(bilinear)
```

將!置於布林變數前，以否定方式描述if指令的運算條件，本題的運算條件設定為evenNumber的布林值為假

Place ! in front of the Boolean variable to describe the operation condition of the if instruction in a negative way. The operation condition of this question is set to the Boolean value of evenNumber is false.

```
1  import UIKit
2
3  var evenNumber = false
4  if                        {
5      print("It is an odd number")
6  }
```

本題以分母不為0，為合法除法的運算條件

In this question, the denominator is not 0, which is the operation condition for legal division.

```
1  import UIKit
2
3  var zeroDenominator = false
4                                  {
5      print("valid division")
6  } else
7  {
8      print("undefined division")
9  }
```

迭代運算時，迴圈數loopNum小於maxLoop，而且收斂條件converge不成立，則迴圈繼續執行．依此原則使用&&設定"loop continue”訊息的列印條件

During the iterative operation, if the number of loops loopNum is less than maxLoop, and the convergence condition converge is not established, the loop will continue to execute. Use && according to this principle to set the printing conditions of the "loop continue" message

```
1 import UIKit
2
3 let maxLoop = 100
4 var converge = false
5 var loopNum = 20
6                                                                  {
7     print("loop continue")
8 }
```

迭代運算時，迴圈數loopNum大於maxLoop，或收斂條件converge成立時，迴圈的停止條件成立．依照前述條件，使用==設定"loop exit”的訊息列印條件

During iterative operation, when the number of loops loopNum is greater than maxLoop, or when the convergence condition converge is established, the stop condition of the loop is established. According to the above conditions, use == to set the message printing conditions of "loop exit”

```
1 import UIKit
2
3 let maxLoop = 100
4 var converge = true
5 var loopNum = 25
6 var haltCondition = converge || loopNum > maxLoop
7                                                  {
8     print("loop exit")
9 }
```

Ternary條件運算子，寫成
question ？ ans1 ： ans 2，如果question為真，運算結果為ans1，否則，運算結果為ans2．本題以h ＞ 0，為rectifyOutput二選一的運算條件，當條件成立時，rectifyOutput設定為h，否則為0
Ternary conditional operator, written as
question ? ans1 : ans2, if question is true, the operation result is ans1, otherwise, the operation result is ans2. In this question, h > 0 is the operation condition for rectifyOutput to choose one of the two. When the condition is true, rectifyOutput is set to h, otherwise it is 0

```
1  import UIKit
2
3  var h = -2
4  var rectifyOutput =
5  print(rectifyOutput)
```

使用ternary二選一條件運算，實作門檻函數

Use ternary two-choice conditional operation to implement the threshold function

```
1 import UIKit
2
3 var threshold = 0.0
4 let num1 = 1
5 let num2 = -1
6 var h = 1.5
7 var thresholdOutput =
8 print(thresholdOutput)
```

使用ternary二選一條件運算，決定evenOdd，當x為偶數時，evenOdd設定為”even”，否則設定為"odd"

Use ternary two-choice conditional operation to determine evenOdd. When x is an even number, evenOdd is set to "even", otherwise it is set to “odd"

```
1  import UIKit
2
3  var x = 11
4  var evenOdd =
5  print(String(x) + " is " + evenOdd)
```

使用ternary二選一條件運算，設定evenNumber的真假值，當作訊息"It is an even number”的列印條件

Use ternary binary conditional operation to set the true or false value of evenNumber as the printing condition of the message "It is an even number”

```
1  import UIKit
2
3  var x = 10
4  var
5  if   evenNumber {
6       print("It is an even number")
7  }
```

使用if else 判斷兩個浮點實數是否相等，如果相等印出”same”，否則印出“different”

Use if else to determine whether two floating point real numbers are equal. If they are equal, print "same", otherwise print “different"

```
1  import UIKit                                                    
2                                                                  
3  var str = "Hello, playground"                                   "Hello, pla...
4  var d1 = 1.11 - 1.10                                            0.01000...
5  var d2 = 2.11 - 2.10                                            0.00999...
6  print("d1 = + \(d1)  d2 = \(d2)")                               "d1 = + 0....
7  if            {                                                 
8      print("Same")                                               
9  }     {                                                         
10     print("Different")                                          "Different\...
   }
```

令epslon代表夠小的數，使用if else 判斷兩個浮點實數是否夠靠近的作法是：判斷兩數差的絕對值是否小於或等於epslon，如果小於或等於印出”same”，否則印出“different”

Let epslon represent a small enough number, and use if else to determine whether two floating point real numbers are close enough: determine whether the absolute value of the difference between the two numbers is less than or equal to epslon, if less than or equal to print "same", otherwise print out “different"

```
1  import UIKit
2
3  var str = "Hello, playground"                                  "Hello, pla...
4  var d1 = 1.11 - 1.10                                           0.01000...
5  var d2 = 2.11 - 2.10                                           0.00999...
6  let epslon = 0.001                                             0.001
7  print("d1 = + \(d1)  d2 = \(d2)")                              "d1 = + 0....
8  if                  <= epslon{
9      print("Same")                                              "Same\n"
10 }else{
11     print("Different")
12 }
```

Example 3: Swift if..else..if Statement

The following program checks whether number is positive, negative or 0.

```
let number = 0;
if number > 0 {
        print("Number is positive.")
}
else if (number < 0) {
        print("Number is negative.")
}
else {
        print("Number is 0.")
}
```

使用if.. else if .. else 判斷value是否落在區間[0,10]．如果小於0印出“too small”，如果大於10印出”too large”

Use if.. else if.. else to determine whether the value falls in the interval [0,10]. If it is less than 0, print "too small", if it is greater than 10, print "too large"

```
13  var value = 9.5
14  if value < 0{
15      print("too small")
16  }
17          value <= 10{
18      print("in range")
19      }
20      {
21      print(" too large")
22  }
```

```
9.5
"in range\n"
```