

# The loop technique in Python

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Python programming language provides 2 types of loops, for loops and while loops. Use these loops together with loop control statements like `break` and `continue` you can create different types of loops. We'll learn about these Python loops below.

## Infinite loop in Python

It is possible to create infinite loops in Python using `while`. When the `while` loop condition always `True`, you get an infinite loop.

To get rid of an infinite loop in Python, use `Ctrl + C`.

### Example of while using infinite loop:

The Python program below requires the user to enter a number and print 3 times the number of that number. The loop is infinite because there are no stopping conditions.

```
while True:
    num = int(input("Nh?p m?t s?: "))
    print("G?p ba c?a",num,"l`",3 * num)
```

The result when running the above code is:

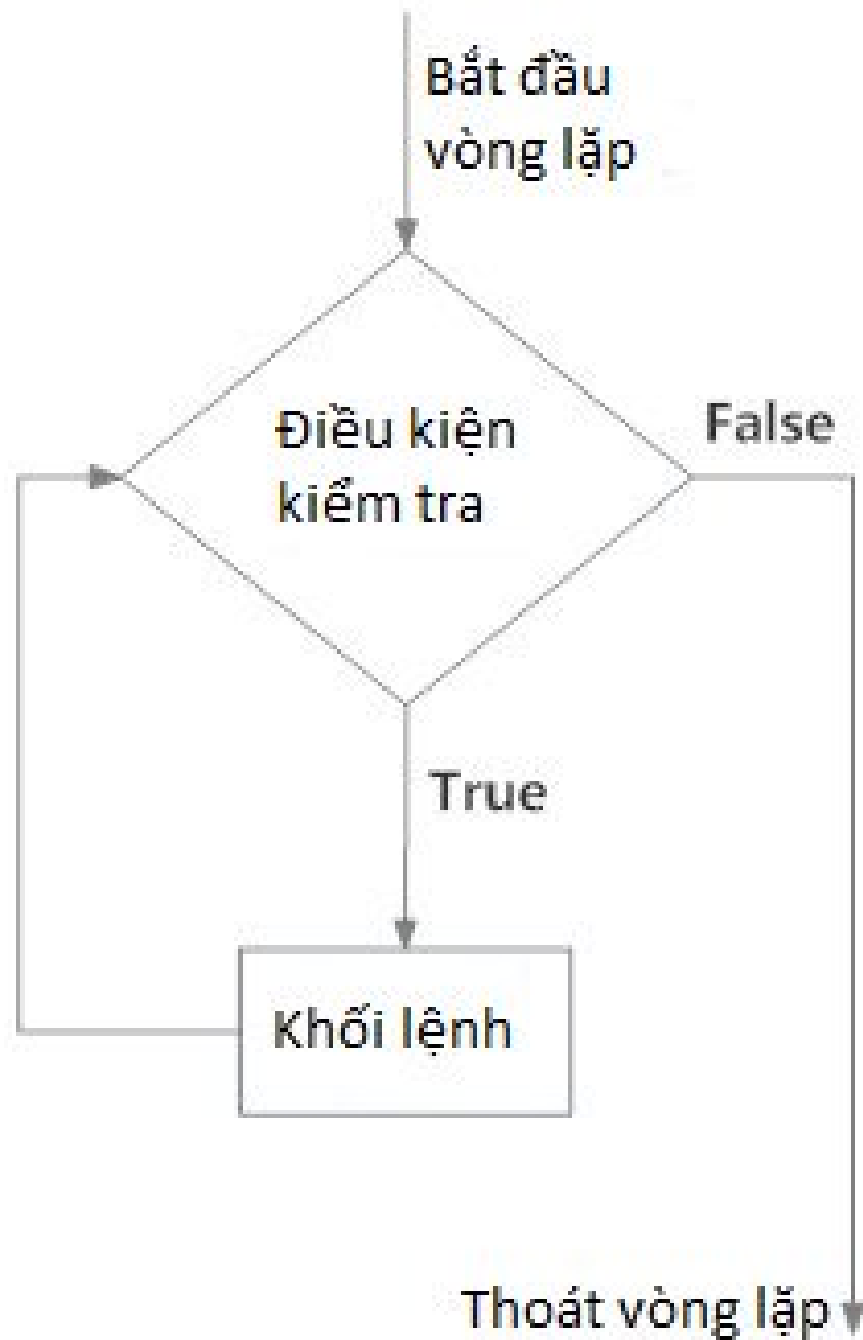
```
Nh?p m?t s?: 3
G?p ba c?a 3 l` 9
Nh?p m?t s?: 5
G?p ba c?a 5 l` 15
Nh?p m?t s?: 7
G?p ba c?a 7 l` 21
Nh?p m?t s?: 9
G?p ba c?a 9 l` 27
Nh?p m?t s?: 10
G?p ba c?a 10 l` 30
Nh?p m?t s?:
Traceback (most recent call last):
```

You just enter Enter will continue to enter the new number and the program will run until you press Ctrl + C.

## **Python loop with the condition at the beginning**

This is a regular repeat, without a `break` statement. The `while` loop condition will appear at the beginning and end of the loop when this condition is `False` .

**Python loop diagram provided at the beginning:**



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**Example of a loop with the condition at the beginning:**

```
# Try different numbers by assigning numbers to n
n = 15

# Use the following command if you want users to enter numbers
#n = int (input ("Enter number n:"))

# Initializing and counting variables i
tong = 0
```

```

i = 1

while i = n:
tong = tong + i
i = i + 1 # update count
# Code by TipsMake.com
# in total
print ("Sum of numbers from 1 to", n, "is", tong)

```

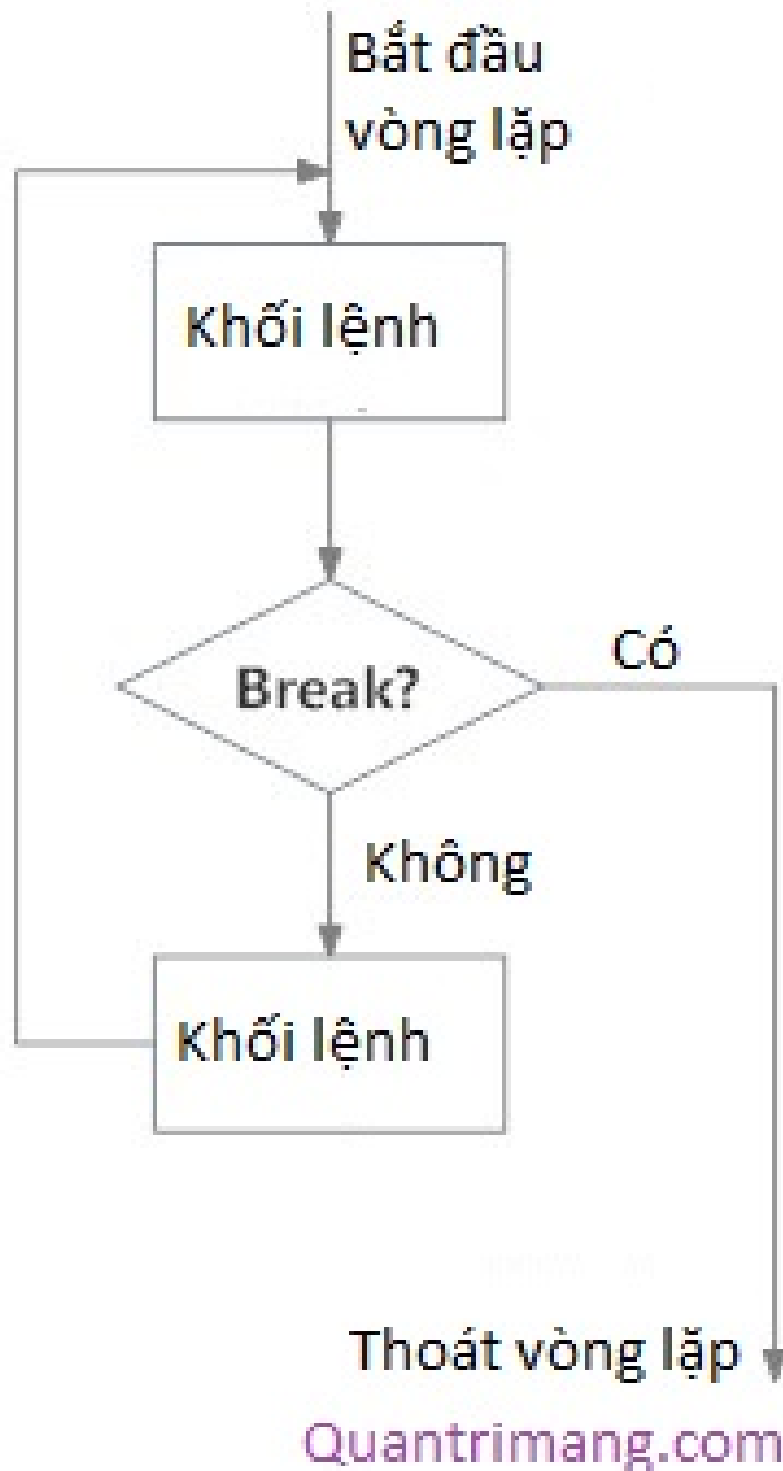
The above program repeats the numbers until the given number n , sums those numbers and prints them to the screen. After running the program, we get the result:

T?ng các s? t? 1 ??n 15 là 120

## Python loop with conditions in between

This type of loop can be done using an infinite loop associated with the `break` statement in the loop block.

**Python loop diagram with conditions in between:**



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**Example of a loop with the middle condition:**

```

# Nhập từ vào tập hợp và dừng cho đến khi nhập một
t nguyên âm nguyenAm = "aeiouAEIOU" # vòng lặp vô hạn
while True : m = input ( "Nhập một nguyên âm: " ) # nếu không phải
    if m in nguyenAm : break print ( "Đây không phải
    là nguyên âm. Hãy thử lại!" ) # Code by TipsMake.com print ( "Chúc mừng
    bạn!" )
  
```

The above program requires the user to enter a vowel, accompanied by a test command to force the user to enter until correct. As long as the user data entered is not vowel until then the loop continues.

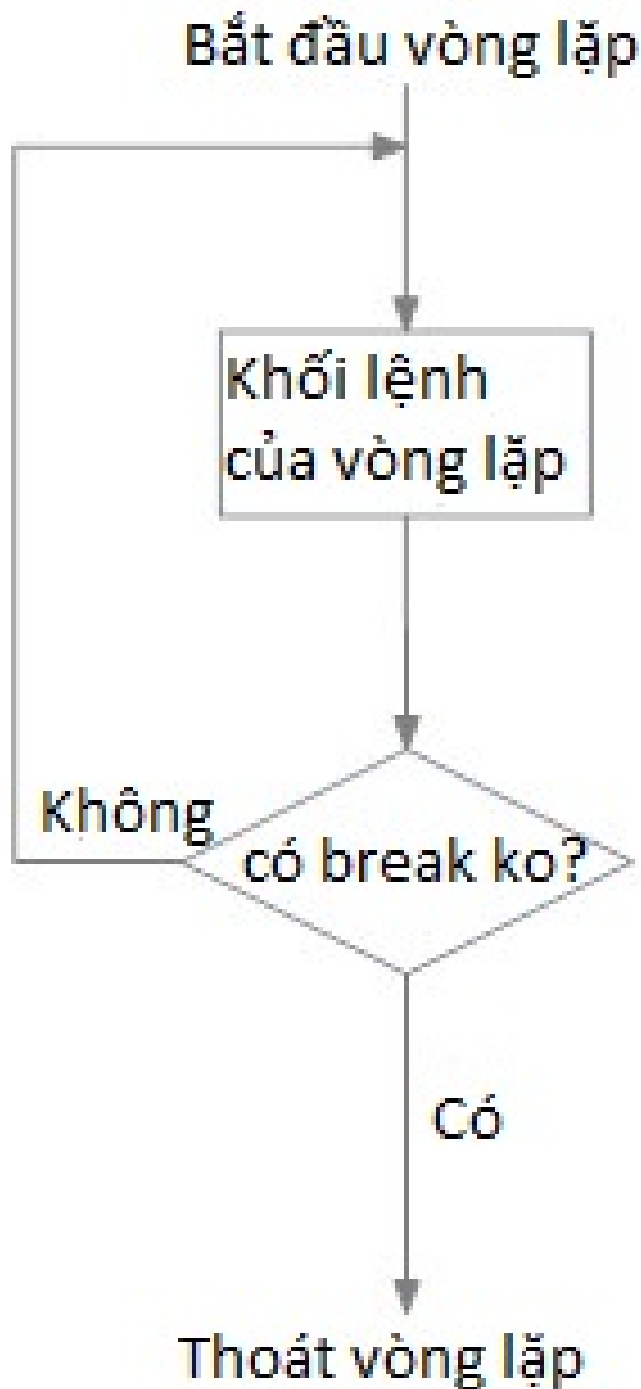
After running the program, we get the following results:

```
Nhập một nguyên âm: y
Đây không phải là nguyên âm. Hãy thử lại!
Nhập một nguyên âm: e
Chuẩn rồi, cảm ơn bạn!
>>> |
```

## Python loop with the condition at the end

This type of loop ensures that the block is executed at least once. It can be done using an infinite loop along with the `break` command at the end. This is quite similar to the `do..while` loop in C.

**Python loop diagram provided at the end:**



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#### Example of Python loop with the end condition:

Below we will create a dice program, giving random results to users using a while loop. The loop will continue until the user chooses to stop.

```
# Tung xúc xắc cho ??n khi ng??i dùng ch?n thoát
import random while True : input ( "Nh?n Enter ?? tung xúc x?c" ) # nh?
n s? m?t xúc x?c b?t k? t? 1 ??
```

```
n 6 num = random . randint ( 1 , 6 ) print ( "B?n tung ???c m?
t" , num ) option = input ( "B?n có mu?n tung l?i không?(y/n) " ) # ?i?
u ki?n if option == 'n' : break
```

When running the program, we get the following result:

```
Nh?n Enter ?? tung xúc x?c
B?n tung ???c m?t 1
B?n có mu?n tung l?i không?(y/n) y
Nh?n Enter ?? tung xúc x?c
B?n tung ???c m?t 4
B?n có mu?n tung l?i không?(y/n) n
>>>
```

So you already know the basic iteration techniques in Python, don't forget to do Python exercises to practice your repetition techniques.

In the next lesson, you will learn about Python functions, syntax and how they work. Do not miss it!

Next lesson: Python functions

Previous post: Pass command in python

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