

# Chapter C

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(察するPython入門)

## C01

### C010

Ctrl + C to stop

```
while True:
    x = float(input("x: "))

    if x > 0:
        print(f"{x} > 0")
    else:
        print(f"{x} <= 0")
```

```
x: 5↵
5.0 > 0
x: -2↵
-2.0 <= 0 x: 3↵
3.0 > 0
...
x: [Ctrl + C]
```

### C011

Enter 'q' to quit.

```
x = input("x: ")

while x != "q":
    x = float(x)

    if x > 0:
        print(f"{x} > 0")
    else:
        print(f"{x} <= 0")

    x = input("x: ")

print("bye!")
```

```
x: 5↵
5.0 > 0
x: -2↵
-2.0 <= 0 x: q↵
bye!
```

## C012

Enter 'q' to quit.

```
while True:
    x = input("x: ")

    if x == "q":
        break

    x = float(x)

    if x > 0:
        print(f"{x} > 0")
    else:
        print(f"{x} <= 0")

print("bye!")
```

```
x: 5↵
5.0 > 0
x: -2↵
-2.0 <= 0 x: q↵
bye!
```

## C013

```
for _ in range(3):
    x = float(input("x: "))

    if x > 0:
        print(f"{x} > 0")
    else:
```

```
print(f"{x} <= 0")  
  
print("bye!")
```

```
x: 5↵  
5.0 > 0  
x: -2↵  
-2.0 <= 0 x: 3↵  
3.0 > 0  
x: q↵  
bye!
```

## C02

### C020

```
for i in range(3):  
    print(i)  
  
print("bye!")
```

```
0  
1  
2  
bye!
```

### C021

```
for i in range(1, 10, 1):  
    print(i)  
  
print("bye!")
```

```
1  
2  
3  
4  
5  
6  
7
```

```
8
9
bye!
```

## C022

```
for i in range(1, 10, 2):
    print(i)

print("bye!")
```

```
1
3
5
7
9
bye!
```

## C023

```
for i in range(10):
    print(2 * i + 1)

print("bye!")
```

```
1
3
5
7
9
11
13
15
17
19
bye!
```

## C024

```
for i in range(10):
    print(f"{i} * {i} = {i ** 2}")
```

```
print("bye!")
```

```
0 * 0 = 0
1 * 1 = 1
2 * 2 = 4
3 * 3 = 9
4 * 4 = 16
5 * 5 = 25
6 * 6 = 36
7 * 7 = 49
8 * 8 = 64
9 * 9 = 81
bye!
```

## C025

```
for i in range(10):
    print(f"{i} * {i} = {i ** 2:2d}")

print("bye!")
```

```
0 * 0 = 0
1 * 1 = 1
2 * 2 = 4
3 * 3 = 9
4 * 4 = 16
5 * 5 = 25
6 * 6 = 36
7 * 7 = 49
8 * 8 = 64
9 * 9 = 81
bye!
```

## C026

```
for i in range(5):
    print(i, end="")
```

```
01234
```

## C027

```

n = int(input("n = ")) # n >= 2

s = 0
for i in range(1, n + 1):
    s = s + i

print(f"1 + ... + {n} = {s}")

```

```

n = 4↵
1 + ... + 4 = 10

```

## C028

```

n = int(input("n = ")) # n > 0

n_digits = 0
while n != 0:
    n = n // 10
    n_digits = n_digits + 1

print(n_digits)

```

```

n = 123↵
123

```

## C03

## C030

```

for i in range(3):
    print(f"i = {i}")

    for j in range(2):
        print("hello")

    print("-----")

print("bye!")

```

```

i = 0
hello
hello
-----
i = 1
hello
hello
-----
i = 2
hello
hello
-----
bye!

```

## C031

```

for i in range(3):
    print("the outer loop")
    print(f"i = {i}")
    for j in range(2):
        print("    the inner loop")
        print(f"    j = {j}")

print("bye!")

```

```

the outer loop
i = 0
    the inner loop
    j = 0
    the inner loop
    j = 1
the outer loop
i = 1
    the inner loop
    j = 0
    the inner loop
    j = 1
the outer loop
i = 2
    the inner loop
    j = 0
    the inner loop
    j = 1
bye!

```

## C032

```

for i in range(1, 3+1):
    for j in range(1, 2+1):
        print(f"{i} * {j} = {i * j:2d}")

print("bye!")

```

```

1 * 1 = 1
1 * 2 = 2
2 * 1 = 2
2 * 2 = 4
3 * 1 = 3
3 * 2 = 6
bye!

```

## C033

```

for i in range(1, 9+1):
    for j in range(1, 9+1):
        print(f"{i * j:2d} ", end="")

    print()

print("bye!")

```

```

1  2  3  4  5  6  7  8  9
2  4  6  8 10 12 14 16 18
3  6  9 12 15 18 21 24 27
4  8 12 16 20 24 28 32 36
5 10 15 20 25 30 35 40 45
6 12 18 24 30 36 42 48 54
7 14 21 28 35 42 49 56 63
8 16 24 32 40 48 56 64 72
9 18 27 36 45 54 63 72 81
bye!

```

## C04

### C040

```

for i in range(5):
    for j in range(5):
        if (i + j) % 2 == 0:
            print("■", end="")

```



```

        else:
            print("□", end="")
        print()

    print("bye!")

```

```

███
███
███
███
███
bye!

```

## C041

```

for i in range(5):
    for j in range(i + 1):
        print("*", end="")
    print()

print("bye!")

```

```

*
**
***
****
*****
bye!

```

## C042

```

for i in range(5):
    for j in range(5 - i):
        print("*", end="")
    print()

print("bye!")

```

```

*****
****
***
**

```

```
*
bye!
```

## C043

```
for i in range(5):
    for j in range(i):
        print(" ", end="")
    for j in range(i, 5):
        print("*", end="")
    print()

print("bye!")
```

```
*****
****
***
**
*
bye!
```

## C044

```
for i in range(5):
    for j in range(5 - i - 1):
        print(" ", end="")
    for j in range(5 - i - 1, 5):
        print("*", end="")
    print()

print("bye!")
```

```
    *
   **
  ***
 ****
*****
bye!
```

## C05

### C050

```
factorial = 1
n = 4

for i in range(1, n + 1):
    factorial = factorial * i

print(factorial)
```

24

## C051

```
factorial = 1
n = 4

for i in range(1, n + 1):
    factorial = factorial * i
    print(f"{i}! = {factorial}")

print("bye!")
```

```
1! = 1
2! = 2
3! = 6
4! = 24
bye!
```

## C052

```
factorial = 1
n = 4

for i in range(1, n + 1):
    print("1", end="")
    for j in range(1 + 1, i + 1):
        print(f" * {j}", end="")

    factorial = factorial * i
    print(f" = {factorial}")

print("bye!")
```

```
1 = 1
1 * 2 = 2
1 * 2 * 3 = 6
1 * 2 * 3 * 4 = 24
bye!
```

## C053

```
factorial = 1
n = 4
s = "1"

for i in range(1 + 1, n + 1):
    factorial = factorial * i
    s = f"{s} * {i}"
    print(f"{s} = {factorial}")

print("bye!")
```

```
1 * 2 = 2
1 * 2 * 3 = 6
1 * 2 * 3 * 4 = 24
bye!
```