

# if if else if elif else nested if

```
In [1]: if True: # indentation is always 4 spaces
        print('Data Science')
```

Data Science

```
In [2]: if False:
        print('Data Science')
        print('bye for now')
```

bye for now

```
In [3]: if True: # indentation is always 4 spaces
        print('Data Science')
        print('bye for now')
```

Data Science  
bye for now

Lets do one program as if divide by 2 then remainder is 0 then it is even number if remainder is not 0 then it is odd number

```
In [4]: #to print only even number
x = 4
r = x % 2
if r == 0:
    print('Even number')
```

Even number

```
In [5]: #to print only even number
x = 5
r = x % 2
if r == 0:
    print('Even number')
```

```
In [6]: x = 5
r = x % 2
if r == 0:
    print('Even number')
print('odd number')
```

odd number

```
In [7]: x = 8
r = x % 2
if r == 0:
    print('Even number')
print('odd number')
```

Even number  
odd number

```
In [8]: x = 8
r = x % 2
if r == 0:
    print('Even number')
if r == 1:
    print('odd number')
```

Even number

```
In [9]: x = 7
r = x % 2
if r == 0:
    print('Even number')
if r == 1:
    print('odd number')
```

odd number

```
In [10]: x = 15
r = x % 2
if r == 0:
    print('Even number')
if r != 0:
    print('odd number')
```

odd number

if we observe the code its too many line cuz many of the coder always they wanted to reduce the code lenght which is very good practise. instead of 2 if we can use if-- else

```
In [11]: x = 5
r = x % 2
if r == 0:
    print('Even number')
else:
    print('Odd Number')
```

Odd Number

```
In [12]: x = 4
r = x % 2
if r == 0:
    print('Even number')
else:
    print('Odd Number')
```

Even number

NESTED IF (if we have 2 condition so we need to implment with nested if )

```
In [13]: x = 3
r = x % 2
if r == 0:
    print(' Even number')
    if x>5:
        print('greater number')
else:
    print('Odd Number')
```

Odd Number

```
In [14]: x = 4
r = x % 2
if r == 0:
    print('Even number')
    if x>5 :
        print('greater number')
    else:
        print('not greater ')
else:
    print('odd number')
```

Even number  
not greater

```
In [15]: x = 6
r = x % 2
if r == 0:
    print('Even number')
    if x>5 :
        print('greater number')
    else:
        print('not greater ')
else:
    print('odd number')
```

Even number  
greater number

We do have concept of ( IF - ELIF- ELSE) e.g i want to print ( 1--> one , 2 --> two, 3--> three, 4--> four, 5- five)

```
In [100]: #when you use if it will check all condition but if we mention elif then it wont check all condition
# when we use if condition it will check all every block of code better debug in pycharm
# you can debug with value 1 & d for both if & elif

x = 3

if x == 1:
    print('one')
if x == 2:
    print('Two')
if x == 3:
    print('Three')
if x == 4:
    print('four')
```

Three

```
In [101]: # elif it wont check till the block once you find the output it wont go to next line
# you can try with multiple parameter 1, 2 & 3 value in x

x = 1

if(x == 1):
    print('one')
elif(x == 2):
    print('Two')
elif(x == 3):
    print('Three')
elif(x == 4):
    print('four')
```

one

```
In [102]: x = 7

if(x == 1):
    print('one')
elif(x == 2):
    print('Two')
elif(x == 3):
    print('Three')
elif(x == 4):
    print('four')
```

```
In [20]: x = 7

if(x == 1):
    print('one')
elif(x == 2):
    print('Two')
elif(x == 3):
    print('Three')
elif(x == 4):
    print('four')
else:
    print('wrong output')
```

wrong output

```
In [21]: x = 4

if(x == 1):
    print('one')
elif(x == 2):
    print('Two')
elif(x == 3):
    print('Three')
elif(x == 4):
    print('four')
else:
    print('wrong output')
```

four

```
In [103]: x = 10

if(x == 1):
    print('one')
elif(x == 2):
    print('Two')
elif(x == 3):
    print('Three')
elif(x == 4):
    print('four')

else:
    print('wrong output')
```

wrong output

LOOPS -- in programming world some time we keep on repeating , may be you want to repeat 5 statement so one way is copy & paste multiple times or other way is

if you want to print the datascience 1000 times then what you will you cant copy for 1000 times , if you want to print 1000 times then you cant do manually . that is the reason why we need to apply loop -> 2 type of loops -- While loop & For loop

```
In [23]: print('data science')
print('data science')
print('data science')
print('data science')
print('data science')
```

```
data science
data science
data science
data science
data science
```

```
In [24]: i = 1          # initializing
while i<=5: # condition
    print('data science')
    i = i + 1 # increment
```

```
data science
data science
data science
data science
data science
```

```
In [25]: i = 5          # initializing
while i>=1: # condition
    print('data science')
    i = i - 1 # decrement
```

```
data science
data science
data science
data science
data science
```

```
In [26]: i = 1          # initializing
while i<=5: # condition
    print('data science',i)
    i = i + 1 # increment
```

```
data science 1
data science 2
data science 3
data science 4
data science 5
```

```
In [27]: i = 5          # initializing
while i>=1: # condition
    print('data science',i)
    i = i - 1 # decrement
```

```
data science 5
data science 4
data science 3
data science 2
data science 1
```

can we use multiple while loop || nested while loop to understand nested while indepth understand you can use pycharm debug with f8 option

```
In [28]: i = 1
while i<=5:
    print('data science') # when we mention end then new line will not create
    j = 1
    while j<=4:
        print('technology')
        j = j + 1

    i = i + 1
    print()

    # the output which we got is very lengthy but how to make them one line Lets refer to below code
```

```
data science
technology
technology
technology
technology
```

```
data science
technology
technology
technology
technology
```

```
data science
technology
technology
technology
technology
```

```
data science
technology
technology
technology
technology
```

```
data science
technology
technology
technology
technology
```

```
In [29]: i = 1
while i<=5:
    print(' datascience', end = "") # when we mention end then new line will not create
    j = 1
    while j<=4:
        print(' technology', end="")
        j = j + 1

    i = i + 1
    print()
```

```
datascience technology technology technology technology
datascience technology technology technology technology
datascience technology technology technology technology
datascience technology technology technology technology
datascience technology technology technology technology
```

```
In [30]: # Lets use while Loop usig some numbers
i = 1
while i <= 2 :
    j = 0
    while j <= 2 :
        print(i*j, end=" ")
        j += 1
    print()
    i += 1
```

```
0 1 2
0 2 4
```

```
In [31]: # Lets use while Loop usig some numbers
i = 1
while i <= 4 :
    j = 0
    while j <= 3 :
        print(i*j, end=" ")
        j += 1
    print()
    i += 1
```

```
0 1 2 3
0 2 4 6
0 3 6 9
0 4 8 12
```

FOR LOOP - normally while loop it work with iteration or certaion some condition but for loop it will work with sequence (list, string,int)

```
In [32]: name = 'nit'
for i in name:
    print(i)
```

```
n
i
t
```

```
In [33]: name1 = [1,3.5,'hallo'] #i want print the value individually
for i in name1:
    print(i)
```

```
1
3.5
hallo
```

```
In [34]: for i in [2, 3, 7.8, 'hi']:
    print(i)
```

```
2
3
7.8
hi
```

```
In [35]: for i in range(5):
    print(i)
```

```
0
1
2
3
4
```

```
In [36]: for i in range(1,5):  
        print(i)
```

```
1  
2  
3  
4
```

```
In [37]: for i in range(1,10,3):  
        print(i)
```

```
1  
4  
7
```

```
In [38]: # print the value which is divisible by 5  
for i in range(1,21):  
    if i%5==0 :  
        print(i)
```

```
5  
10  
15  
20
```

```
In [39]: # print the value which is divisible by 5 i dont want that value  
for i in range(1,21):  
    if i%5!=0 :  
        print(i)
```

```
1  
2  
3  
4  
6  
7  
8  
9  
11  
12  
13  
14  
16  
17  
18  
19
```

## LETS DISCUSS ABOUT 3 KEYWORDS

-- BREAK || CONTINUE || PASS BREAK STATEMNT - if you apply break statment in a loop then it will end the loop # Pass = skips block of code( function, class etc) # Continue= skips 1 step/iteration during loop # Break= jumps out of the function/loop



In [40]: *# write the code user ask chocklet from vendor machine write the basic code*

```
x = int(input('How many choclets you want:?'))

i = 1
while i<=x:
    print('choclet')
    i += 1
```

```
How many choclets you want:?7
choclet
choclet
choclet
choclet
choclet
choclet
choclet
choclet
```

If the user says i need 100 choclet but vending machine dont have 100 chocolate & machine has only 50 chocolate so what you do on those scenario We have 3 choice now (eiter stop the transaction by you or you can give only 50 chocolate) & may be vendor machine display the result as we are out of the stock Now lets try in the code

In [41]: *ava = 5 # the machine has only 5 choclet*

```
x = int(input('How many choclets you want:?'))

i = 1
while i<=x:
    print('choclet')
    i += 1
# if you check the user wants 10 choclets but availabe choclet is 5 but we got output as 10 choclet
# in this code we just declare but we dint apply any condition to it
```

```
How many choclets you want:?5
choclet
choclet
choclet
choclet
choclet
```

In [42]: *available\_choclet = 5 # the machine has only 10 candis*

```
x = int(input('How many choclets you want:?'))

i = 1
while i<=x:

    if i>available_choclet: # we stop the execution but which code execution not entire code , i want to c
        break # break is statement | means jump out of the loop
    print('choclet')
    i += 1

print('bye for now')
```

```
How many choclets you want:?4
choclet
choclet
choclet
choclet
bye for now
```

```
In [43]: available_choclet = 5 # the machine has only 10 candies

x = int(input('How many choclets you want:?'))

i = 1
while i<=x:

    if i>available_choclet: # we stop the execution but which code execution not entire code , i want to c
        print('out of stock')
        break # break is statement | means jump out of the loop
    print('choclet')
    i += 1

print('bye for now')
```

```
How many choclets you want:?7
choclet
choclet
choclet
choclet
choclet
choclet
out of stock
bye for now
```

```
In [45]: for i in range(1,11):
         print(i)
```

```
1
2
3
4
5
6
7
8
9
10
```

i dont want 11 number i want only 5 number for the range of 1 to 10

```
In [46]: for i in range(1,11):
         if i == 5:
             break
         print(i)
```

```
1
2
3
4
```

in continue loop wont be terminate & exclue the assign number it give you entire output

```
In [47]: for i in range(1,11):
         if i == 3:
             continue
         print(i)
```

```
1
2
4
5
6
7
8
9
10
```

```
In [48]: for i in range(1,11):
        if i == 5:
            continue
        print('hello ',i)
```

```
hello 1
hello 2
hello 3
hello 4
hello 6
hello 7
hello 8
hello 9
hello 10
```

PASS Statement - pass the code & it wont go ( code give you the error)

```
In [50]: for i in range(1,11):
```

```
Cell In[50], line 1
    for i in range(1,11):
    ^
SyntaxError: incomplete input
```

```
In [51]: for i in range(1,11):
        pass
```

you need to print the number from 1 to 50 but dont print the value which is divisible by 3 or 5

```
In [52]: for i in range(1,50):
        if i%3 == 0:
            print(i)
        print('end')
```

```
3
6
9
12
15
18
21
24
27
30
33
36
39
42
45
48
end
```

```
In [53]: for i in range(1,50):  
        if i%3 == 0:  
            continue  
        print(i)  
        print('end')
```

```
1  
2  
4  
5  
7  
8  
10  
11  
13  
14  
16  
17  
19  
20  
22  
23  
25  
26  
28  
29  
31  
32  
34  
35  
37  
38  
40  
41  
43  
44  
46  
47  
49  
end
```

```
In [54]: for i in range(1,50):  
        if i%3 == 0 or i%5 == 0:  
            continue  
        print(i)  
print('end')  
# it will skip all the value which is divisible by 3 or 5
```

```
1  
2  
4  
7  
8  
11  
13  
14  
16  
17  
19  
22  
23  
26  
28  
29  
31  
32  
34  
37  
38  
41  
43  
44  
46  
47  
49  
end
```

```
In [55]: for i in range(1,50):  
        if i%3 == 0 and i%5 == 0:  
            continue  
        print(i)  
print('end')  
# when you apply and you wont get the value which is divisible by both 3 & 5 (15)
```

```
1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
46  
47  
48  
49  
end
```

```
In [56]: # i dont want to print the values which are odd numbers that means print only even numbers
for i in range(1,50):

    if (i%2 != 0):
        pass
    else:
        print(i)
print('bye')
```

```
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
bye
```

```
In [57]: print('# # # #')
print('# # # #')
print('# # # #')
print('# # # #')
```

```
# # # #
# # # #
# # # #
# # # #
```

```
In [58]: for j in range(4):
print('#')
```

```
#
#
#
#
```

```
In [59]: for j in range(4):
print('#', end=" ")
```

```
# # # #
```

```
In [60]: for j in range(4):
print('#', end=" ")

for j in range(4):
print('#', end=" ")
```

```
# # # # # # # #
```

```
In [61]: for j in range(4):
          print('#', end=" ")

          print()

          for j in range(4):
              print('#', end=" ")

          # # # #
          # # # #
```

```
In [62]: for j in range(4):
          print('#', end=" ")

          print()

          for j in range(4):
              print('#', end=" ")

          print()

          for j in range(4):
              print('#', end=" ")

          print()

          for j in range(4):
              print('#', end=" ")

          # # # #
          # # # #
          # # # #
          # # # #
```

```
In [63]: for i in range(4):
          for j in range(4):
              print('#', end=" ")
          print()
          # pease use debug mode in pycharm

          # # # #
          # # # #
          # # # #
          # # # #
```

```
In [64]: list(range(5))
```

```
Out[64]: [0, 1, 2, 3, 4]
```

```
In [65]: for i in range(5):
          for j in range(i):
              print('#', end=" ")
          print()

          #
          # #
          # # #
          # # # #
```



```
In [66]: for i in range(5):
        for j in range(i+1):
            print('#', end=" ")
        print()
```

```
#
# #
# # #
# # # #
# # # # #
```

```
In [67]: for i in range(4):
        for j in range(4-i):
            print('#', end=" ")
        print()
```

```
# # # #
# # #
# #
#
```

For|Else in python In other language for else not supportable but in python it is supportable

eg- lets print the number from 1- 20 & we dont want print number which is divisible by 5

```
In [68]: nums = [12,15,18,21,26]
        for num in nums:
            if num % 5 == 0:
                print(num)
```

15

```
In [69]: nums = [12,14,18,21,25,30,35]
        for num in nums:
            if num % 5 == 0:
                print(num)
```

25  
30  
35

```
In [70]: nums = [12,14,18,21,25,20]
        for num in nums:
            if num % 5 == 0:
                print(num)
```

25  
20

```
In [71]: nums = [12,14,18,21,25,20]
        for num in nums:
            if num % 5 == 0:
                print(num)
                break
```

25

```
In [72]: nums = [12,14,18,21,20,25]
        for num in nums:
            if num % 5 == 0:
                print(num)
                break
```

20

```
In [73]: nums = [10,14,18,21,5,10]
for num in nums:
    if num % 5 == 0:
        print(num)
        break #it will print only 1 number then it break
```

10

```
In [74]: nums = [10,14,18,21,25,20]
for num in nums:
    if num % 5 == 0:
        print(num)
        continue
```

10  
25  
20

```
In [77]: nums = [7,14,18,21,23,27] #hear there is no number which is divisible by 5 we got output as blank
for num in nums:
    if num % 5 == 0:
        print(num)
        break
```

```
In [78]: nums = [7,14,18,21,23,27] #hear there is no number which is divisible by 5 we got output as blank
for num in nums:
    if num % 5 == 0:
        print(num)
        break
    else:
        print('Number Not Found') #every iteration it cheking condition
```

Number Not Found  
Number Not Found  
Number Not Found  
Number Not Found  
Number Not Found  
Number Not Found

```
In [79]: nums = [7,14] #hear there is no number which is divisible by 5 we got output as blank
for num in nums:
    if num % 5 == 0:
        print(num)
        break
    else:
        print('Number Not Found') #every iteration it cheking condition
```

Number Not Found  
Number Not Found

```
In [80]: nums = [7,14,18,21,23,27] #hear there is no number which is divisible by 5 we got output as blank
for num in nums:
    if num % 5 == 0:
        print(num)
        break
else:
    print('Number Not Found') # hear else we dont write in if block but we can write in for block only
```

Number Not Found

```
In [81]: nums = [10,14,18,21,20,27] #hear there is no number which is divisible by 5 we got output as blank
for num in nums:
    if num % 5 == 0:
        print(num)
        #break
    else:
        print('Not Found')
```

10  
20  
Not Found

```
In [82]: nums = [10,14,18,21,20,27,30] #hear there is no number which is divisible by 5 we got output as blank
for num in nums:
    if num % 5 == 0:
        print(num)
        #break
    else:
        print('Not Found')
```

10  
20  
30  
Not Found

```
In [83]: nums = [10,14,18,21,20,27] #hear there is no number which is divisible by 5 we got output as blank
for num in nums:
    if num % 5 == 0:
        print(num)
        break
    else:
        print('Not Found')
```

10

prime number - how to check given number is prime number or not

```
In [84]: num = 12
for i in range(2,num):
    if num % i == 0:
        print('Not prime Number')
        break
    else:
        print('Prime Number')
```

Not prime Number

```
In [85]: num = 13
for i in range(2,num):
    if num % i == 0:
        print('Not prime Number')
        break
    else:
        print('Prime Number')
```

Prime Number

## Array in python

```
In [86]: from array import *
arr = array('i',[])

n = int(input('Enter the length of the array'))

for i in range(5):
    x = int(input('Enter the next value'))
    arr.append(x)
print(arr)
```

```
Enter the length of the array2
Enter the next value3
Enter the next value4
Enter the next value5
Enter the next value6
Enter the next value7
array('i', [3, 4, 5, 6, 7])
```

```
In [93]: from array import *
arr = array('i',[])

n = int(input('Enter the length of the array'))

for i in range(5):
    x = int(input('Enter the next value'))
    arr.append(x)
print(arr)
```

```
Enter the length of the array9
Enter the next value8
Enter the next value7
Enter the next value6
Enter the next value5
Enter the next value4
array('i', [8, 7, 6, 5, 4])
```

```
from numpy import * arr = array([1,2,3,4,5]) print(arr) type(arr)
```

```
In [ ]:
```