

```
In [ ]: if True:
        print('hello')
```

```
In [2]: if True:
        print('hello')
```

```
Cell In[2], line 2
    print('hello')
    ^
```

**IndentationError:** expected an indented block after 'if' statement on line 1

```
In [3]: if True:
        print('hello')
```

hello

```
In [4]: if False:
        print('bye')
```

```
In [5]: if True:
        print('Data Science')

        print('bye for now')
```

Data Science  
bye for now

```
In [6]: if False:
        print('Data Science')

        print('bye for now')
```

bye for now

```
In [7]: if True:
        print('Data Science')

        print('bye for now')
```

Data Science  
bye for now

```
In [8]: if True:
        print('Data Science')

        else:
            print('bye for now')
```

Data Science

```
In [9]: if False:
        print('Data Science')

        else:
            print('bye for now')
```

bye for now

Writig the python code to check wether number is even or odd

```
In [10]: x = 4

r = x % 2

if r == 0:
    print('Even number')
```

Even number

```
In [11]: x = 5

r = x % 2

if r == 0:
    print('Even number')
```

```
In [12]: x = 6

r = x % 2

if r == 0:
    print('Even number')

if r == 1:
    print('odd number')
```

Even number

```
In [13]: x = 6

r = x % 2

if r == 0:
    print('Even number')
else:
    print('odd number')
```

Even number

```
In [14]: x = 6
r = x % 2

if r == 0:
    print('Even number')
print('odd number')
```

Even number

odd number

```
In [15]: x = 4
r = x % 2

if r == 0:
    print('Even number')
else:
    print('odd number')
```

Even number

```
In [16]: x = 5
r = x % 2
```

```
if r == 0:    print('Even number')
else:        print('odd number')
```

odd number

```
In [17]: x = 10
r = x % 2

if r == 0:
    print('Even number')
if r == 1:
    print('odd number')
```

Even number

```
In [18]: x = 9
r = x % 2

if r == 0:
    print('Even number')

if r != 0:
    print('odd number')
```

odd number

nested if

```
In [19]: x = 3
r = x % 2

if r == 0:
    print('Even number')
    if x>5:
        print('greater number')

else:
    print('Odd Number')
```

Odd Number

```
In [20]: x = 6
r = x % 2

if r == 0:
    print('Even number')

    if x>5:
        print('greater number')
    else:
        print('smaller number')

else:
    print('Odd Number')
```

Even number

greater number

```
In [21]: x = 4

if x == 1:
```

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

four

```
In [22]: x = 2

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

Two

```
In [23]: x = 10

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

```
In [24]: x = 10

if x == 1:
    print('one')

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

else:
    print('number not found')
```

number not found

```
In [26]: num = int(input("Enter a number: "))

if num > 0:
    print("Positive")
elif num < 0:
    print("Negative")
else:
    print("Zero")
```

Zero

```
In [27]: x = 4

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

four

```
In [28]: x = 7

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

```
In [29]: 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 [30]: 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 [31]: 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

```

In [32]: #short hand if
a = 30
b = 20
if a > b: print("a is greater than b")

```

a is greater than b

## LOOPS

```

In [33]: 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 [34]: i = 1

while i<=5: # condition
    print('data science')
    i = i + 1 # increment

```

data science  
data science  
data science  
data science  
data science

```

In [35]: i = 5

while i>=1: # condition
    print('data science')
    i = i - 1 # decrement

```

data science  
data science  
data science  
data science  
data science

```

In [36]: i = 1

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 [37]: 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
```

```
In [38]: i = 1

        while i<=5:
            print('data science')
            j = 1
            while j<=4:
                print('technology')
                j = j + 1

            i = i + 1
            print()
```

```
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 [39]: i = 1
while i<=5:
    print(' datascience', end = "") # when we mention end then new line will not
    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 [40]: 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 [41]: 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

```
In [42]: name = 'nit'

for i in name:
    print(i)
```

```
n
i
t
```

```
In [43]: name1 = [1,3.5,'hello']

for i in name1:
    print(i)
```

```
1
3.5
hello
```

```
In [44]: for i in [2, 3, 7.8, 'hi']:
          print(i)
```

```
2
3
7.8
hi
```

```
In [45]: range(5)
```

```
Out[45]: range(0, 5)
```

```
In [46]: for i in range(5):
          print(i)
```

```
0
1
2
3
4
```

```
In [47]: for i in range(2,5):
          print(i)
```

```
2
3
4
```

```
In [48]: for i in range(1,10,3):  
         print(i)
```

1  
4  
7

```
In [49]: # print the value which is divisible by 5  
         for i in range(1,21):  
             print(i)
```

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20

```
In [50]: for i in range(1,51):  
           
         if i%5==0 :  
             print(i)
```

5  
10  
15  
20  
25  
30  
35  
40  
45  
50

```
In [51]: for i in range(1,51):  
           
         if i%5!=0 :  
             print(i)
```

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

In [52]: `x = int(input('How many chocolates you want:'))`

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

chocolates  
chocolates  
chocolates  
chocolates  
chocolates  
chocolates  
chocolates  
chocolates  
chocolates  
chocolates

```
In [57]: ava = 5 # the machine has only 5 choclet

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

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

choclates  
choclates  
choclates  
choclates  
choclates

```
In [58]: available_choclet = 5 # the machine has only 10 candis

x = int(input('How many chocolates user want:?'))

i = 1
while i<=x:

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

print('bye for now')
```

choclates  
choclates  
choclates  
choclates  
choclates  
bye for now

```
In [59]: available_choclet = 5 # the machine has only 10 candis

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

i = 1
while i<=x:

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

print('bye for now')
```

choclates  
choclates  
choclates  
choclates  
choclates  
out of stock  
bye for now

```
In [60]: for i in range(1,11):
```

```
print(i)
```

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

```
In [61]: for i in range(1,11):  
         if i == 6:  
             break  
         print(i)
```

```
1  
2  
3  
4  
5
```

```
In [62]: for i in range(1,11):  
         if i == 3:  
             continue  
         print(i)
```

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

```
In [63]: for i in range(1,11):  
         if i == 6:  
             continue  
         print('hello :',i)
```

```
hello : 1  
hello : 2  
hello : 3  
hello : 4  
hello : 5  
hello : 7  
hello : 8  
hello : 9  
hello : 10
```

```
In [64]: for i in range(1,11):
```

```
Cell In[64], line 1  
    for i in range(1,11):  
        ^  
SyntaxError: incomplete input
```

```
In [65]: for i in range(1,11):  
         pass
```

print the numbers 1 to 50 but dont print the numbers which are divisible by 3 or 5

```
In [66]: for i in range(1,51):  
         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 [67]: for i in range(1,51):  
         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
50
end
```

```
In [68]: for i in range(1,51):
          if i%3 == 0 or i%5 == 0:
              continue
          print(i)
```

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

```
In [69]: for i in range(1,50):  
         if i%3 == 0 or i%5 == 0:  
             continue  
         print(i)  
         print('end')
```



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 [70]: for i in range(1,51):  
        if (i%2 == 0):  
            #print('even')  
            continue  
        else:  
            print(i)  
print('bye')
```

1  
3  
5  
7  
9  
11  
13  
15  
17  
19  
21  
23  
25  
27  
29  
31  
33  
35  
37  
39  
41  
43  
45  
47  
49  
bye

## PRINTING PATTERN IN PYTHON

```
In [71]: print('# # # #')
          print('# # # #')
          print('# # # #')
          print('# # # #')
```

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

```
In [72]: for i in range(1,5):
          i=i+1
          print('# # # # ')
```

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

```
In [73]: for i in range(1,5):
          if i<=5:
              print('# # # #')
```

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

```
In [74]: for j in range(4):
          print('#')
```

```
#
#
#
#
```

```
In [75]: for j in range(4):
         print('# # # #')
```

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

```
In [76]: for j in range(4):
         print('#', end = " ")
```

```
# # # #
```

```
In [77]: for j in range(4):
         print('#', end=" ")

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

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

```
In [78]: for j in range(4):
         print('#', end=" ")

         print()

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

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

```
In [79]: 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 [80]: for i in range(4):
         for j in range(4):
```

```
print('#', end=" ")
print()
```

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

```
In [81]: for i in range(4):
         for j in range(i+1):
             print('#', end = " ")
         print()
```

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

```
In [82]: for i in range(1,5):
         print("# "*i)
```

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

```
In [83]: for i in range(1,5):
         for j in range(4):
             if i>j:
                 print("#",end=" ")
         print()
```

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

```
In [84]: list(range(5))
```

```
Out[84]: [0, 1, 2, 3, 4]
```

```
In [85]: for i in range(4):
         for j in range(i):
             print('#', end=" ")
         print()
```

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

```
In [86]: for i in range(4):
         for j in range(i+1):
             print('#', end=" ")
         print()
```

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

```
In [87]: for i in range(4):
         for j in range(4-i):
```

```
print('#', end=" ")
print()
```

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

In [88]: `for i in range(1,5):`  
`print("# "*(5-i))`

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

for else

In [89]: `nums = [12,15,18,21,26, 30, 40]`

```
for num in nums:
    if num % 5 == 0:
        print(num)
```

```
15
30
40
```

In [90]: `nums = [12,14,18,21,25,30,35]`

```
for num in nums:
    if num % 5 == 0:
        print(num)
```

```
25
30
35
```

In [91]: `nums = [12,14,18,21,25,20]`

```
for num in nums:
    if num % 5 == 0:
        print(num)
```

```
25
20
```

In [92]: `nums = [12,14,18,21,20,25]`

```
for num in nums:
    if num % 5 == 0:
        print(num)
        break
```

```
20
```

In [93]: `nums = [12,14,18,21,20,25]`

```
for num in nums:
    if num % 5 == 0:
        print(num)
        break
```

20

```
In [94]: nums = [10,14,18,21,5,10]

for num in nums:
    if num % 5 == 0:
        print(num)
        break
```

10

```
In [95]: nums = [7,14,18,21,23,27]

for num in nums:
    if num % 5 == 0:
        print(num)
        break
```

```
In [96]: nums = [7,14,18,21,23,27,29]

for num in nums:
    if num % 5 == 0:
        print(num)
        break
    else:
        print('Number Not Found')
```

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

```
In [97]: nums = [7,14]

for num in nums:
    if num % 5 == 0:
        print(num)
        break
    else:
        print('Number Not Found')
```

Number Not Found  
Number Not Found

```
In [98]: nums = [7,14,18,21,23,27]

for num in nums:
    if num % 5 == 0:
        print(num)
        break
    else:
        print('Number Not Found')
```

Number Not Found

```
In [99]: nums = [10,14,18,21,20,27]

for num in nums:
    if num % 5 == 0:
```

```

        print(num)
        break
    else:
        print('Not Found')

```

10

In [100...

```

nums = [10,14,18,21,20,27,30]

for num in nums:
    if num % 5 == 0:
        print(num)
        #break
    else:
        print('Not Found')

```

10

20

30

Not Found

In [101...

```

nums = [10,14,18,21,20,27]
for num in nums:
    if num % 5 == 0:
        print(num)
        break
    else:
        print('Not Found')

```

10

How to check given number is prime number or not

In [102...

```

num = 14

for i in range(2,num):
    if num % i == 0:
        print('Not prime Number')
        break
    else:
        print('Prime Number')

```

Not prime Number

In [103...

```

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 [104...

```

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)
```

array('i', [6, 9, 10, 4, 3])

```
In [105... 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)
```

array('i', [9, 7, 5, 3, 2])

```
from array import * arr = []
```

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

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

Way of creating array using numpy

```
In [112... from numpy import *
arr = array([1,2,3,4,5])
print(arr)
type(arr)
```

[1 2 3 4 5]

Out[112... numpy.ndarray

```
In [113... print(arr.dtype)
```

int32

```
In [114... arr = array([1,2,3,4,5.9])
print(arr)
```

[1. 2. 3. 4. 5.9]

```
In [115... print(arr.dtype)
```

float64

```
In [116... arr2 = array([1,2,3,4,5.9],float)
arr2
```

Out[116... array([1. , 2. , 3. , 4. , 5.9])

```
In [117... arr3 = array([1,2,3,4,5.6],int)
arr3
```

Out[117... array([1, 2, 3, 4, 5])

```
In [118... import numpy as np
```



```
In [119... arr4 = np.linspace(0, 16, 10) # break the code between 10 spaces between 0 to 16
arr4
```

```
Out[119... array([ 0.          ,  1.77777778,  3.55555556,  5.33333333,  7.11111111,
        8.88888889, 10.66666667, 12.44444444, 14.22222222, 16.          ])
```

```
In [120... arr5 = np.arange(0,10,2)
arr5
```

```
Out[120... array([0, 2, 4, 6, 8])
```

```
In [121... arr6 = np.zeros(5)
arr6
```

```
Out[121... array([0., 0., 0., 0., 0.])
```

```
In [122... arr7 = np.ones(5)
arr7
```

```
Out[122... array([1., 1., 1., 1., 1.])
```

```
In [ ]: import tkinter as tk
# Function to be called when the button is clicked
def on_button_click():
    label.config(text="Button clicked!")

# Create the main application window
root = tk.Tk()
root.title("Simple Tkinter App")

# Create a Label widget
label = tk.Label(root, text="Hello, Tkinter!")
label.pack(pady=20)

# Create a button widget
button = tk.Button(root, text="Click Me", command=on_button_click)
button.pack(pady=20)

# Run the application
root.mainloop()
```

```
In [ ]: import tkinter as tk
from tkinter import messagebox

# Function to be called when the button is clicked
def on_button_click():
    user_input = entry.get()
    messagebox.showinfo("Information", f"You entered: {user_input}")

# Create the main application window
root = tk.Tk()
root.title("Simple Tkinter App")

# Create a Label widget
label = tk.Label(root, text="Enter something:")
label.pack(pady=10)

# Create a text entry widget
```

```
entry = tk.Entry(root, width=30)
entry.pack(pady=10)

# Create a button widget
button = tk.Button(root, text="Submit", command=on_button_click)
button.pack(pady=10)

# Run the application
root.mainloop()
```

In [ ]: