

## if

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

Data Science

```
In [3]: if False:  
        print('Data Science')  
        print('bye for now')
```

bye for now

```
In [4]: if True:  
        print('Data Science')  
        print('bye for now')
```

Data Science

bye for now

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

```
In [5]: x=14  
        r=x%2  
        if r==0:  
            print('Even number')  
        if r==1:  
            print('Odd Number')
```

Even number

## if else

```
In [7]: x=14  
        r=x%2  
  
        if r==0:  
            print('Even number')  
        else:  
            print('Odd Number')
```

Even number

```
In [8]: x=5  
        r=x%2  
        if r==0:  
            print('Even number')  
        print('odd number')
```

odd number

```
In [9]: x=8  
        r=x%2  
        if r==0:  
            print('Even number')  
        if r==1:
```

```
print('odd number')
```

Even number

```
In [10]: x=7
r=x%2
if r==0:
    print('Even number')
if r==1:
    print('odd number')
```

odd number

```
In [11]: x=13
r=x%2
if r==0:
    print('Even number')
if r!=0:
    print('odd number')
```

odd number

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

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

Even number

```
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('odd number')
```

Even number

## Nested if

```
In [16]: x=6
r=x%2
if r==0:
    print('Even number')
    if x>5:
        print('greater number')
    else:('not greater' )
else:
    print('odd number')
```

Even number  
greater number

```
In [17]: x=2
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

## if elif else

```
In [19]: x=1
if(x==1):
    print('one')
if(x==2):
    print('two')
if(x==3):
    print('three')
if(x==4):
    print('four')
```

one

```
In [20]: x=2
if(x==1):
    print('one')
elif(x==2):
    print('two')
elif(x==3):
    print('three')
elif(x==4):
    print('four')
```

two

```
In [21]: x=5
if(x==1):
    print('one')
elif(x==2):
    print('two')
elif(x==3):
    print('three')
```

```
elif(x==4):  
    print('four')
```

```
In [22]: x==15  
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 [24]: i=1  
while i<=5:  
    print('data science')  
    i=i+1
```

data science  
data science  
data science  
data science  
data science

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

data science  
data science  
data science  
data science  
data science

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

data science : 1  
data science : 2  
data science : 3  
data science : 4  
data science : 5

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

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

## nested while loop

```
In [29]: 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 [30]: i=1  
while i<=5:  
    print('data science', end= "")  
    j=1  
    while j<=4:  
        print('technology', end="")  
        j=j+1  
    i=i+1  
    print()
```

```
data sciencetechnologytechnologytechnologytechnology
data sciencetechnologytechnologytechnologytechnology
data sciencetechnologytechnologytechnologytechnology
data sciencetechnologytechnologytechnologytechnology
data sciencetechnologytechnologytechnologytechnology
```

```
In [31]: i=1
while i<=5:
    print('data science',end=" ")
    j=1
    while j<=4:
        print('technology',end=" ")
        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 [32]: 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
```

if i# For loop

```
In [34]: name='nit'
for i in name:
    print(i)
```

```
n
i
t
```

```
In [35]: name1=[1,3.5,'hallo']
for i in name1:
    print(i)
```

```
1
3.5
hallo
```

```
In [36]: for i in [2,3,7.8,'hi']:
    print(i)
```

```
2
3
7.8
hi
```

```
In [37]: for i in range(5):  
         print(i)
```

0  
1  
2  
3  
4

```
In [38]: for i in range(1,5):  
         print(i)
```

1  
2  
3  
4

```
In [39]: for i in range(1,10,3):  
         print(i)
```

1  
4  
7

```
In [40]: for i in range(1,11):  
         if i%5!=0:  
             print(i)
```

1  
2  
3  
4  
6  
7  
8  
9

```
In [41]: for i in range(1,51):  
         if i%5==0:  
             print(i)
```

5  
10  
15  
20  
25  
30  
35  
40  
45  
50

## Break|Continue|Pass -(3 Keywords)

```
In [43]: for i in range(1,11):  
         print(i)
```

1  
2  
3  
4  
5  
6  
7  
8  
9  
10

```
In [44]: for i in range(1,11):  
         if i ==5:  
             break
```

```
In [45]: for i in range(1,11):  
         if i==5:  
             break  
         print(i)
```

1  
2  
3  
4

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

5

Continue

```
In [47]: for i in range(1,11):  
         if i==5:  
             continue  
         print(i)
```

1  
2  
3  
4  
6  
7  
8  
9  
10

```
In [48]: for i in range(1,11):  
         pass
```

Printing pattern in python

```
In [49]: print('####')  
         print('####')  
         print('####')  
         print('####')
```

####  
####  
####  
####



```
In [50]: for j in range(4):
         print('#',end=" ")
```

```
# # # #
```

```
In [51]: for j in range(4):
         print('#',end=" ")
```

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

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

```
In [52]: for j in range(4):
         print('#',end=" ")
         print()
         for j in range(4):
             print('#',end=" ")
```

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

```
In [53]: 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 i in range(4):
             print('#',end=" ")
```

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

```
In [54]: for i in range(4):
         for j in range(4):
             print('#',end=" ")
         print()
```

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

```
In [55]: for i in range(5):
         for j in range(i):
             print('#',end=" ")
         print()
```

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

```
In [56]: for i in range(5):
         for j in range(i+1):
```

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

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

```
In [57]: for i in range(4):
         for j in range(i+1):
             print('#',end=" ")
         print()
```

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

```
In [58]: for i in range(4):
         for j in range(i-1):
             print('#',end=" ")
         print()
```

```
#
# #
```

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

```
# # # #
```

## For|Else in Python

```
In [61]: nums=[12,15,18,21,26]
         for num in nums:
             if num % 5==0:
                 print(num)
```

15

```
In [62]: nums=[12,14,18,21,25]
         for num in nums:
             if num % 5==0:
                 print(num)
```

25

```
In [63]: nums=[12,14,18,21,25,20]
         for i in nums:
             if num % 5==0:
                 print(num)
```

25  
25  
25  
25  
25  
25

```
In [64]: nums=[12,14,18,21,25,20]
        for num in nums:
            if num % 5==0:
                print(num)
                break
```

25

```
In [65]: nums=[10,14,18,21,20,25]
        for num in nums:
            if num % 5==0:
                print(num)
                break
```

10

```
In [66]: nums=[7,14,18,21,23,27]
        for num in nums:
            if num % 5==0:
                print(num)
                #break
```

```
In [67]: nums=[7,14,18,21,23,27,22]
        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 [68]: nums=[10,14,18,21,20,27]
        for num in nums:
            if num % 5==0:
                print(num)
            else:
                print('Not Found')
```

10  
20  
Not Found

```
In [69]: nums=[10,14,18,21,20,27]
        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 [70]: 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 [71]: num=13
        for i in range(2,num):
            if num % i==0:
                print('Not prime Number')
                break
            else:
                print('Prime Number')

```

Prime Number

Prime Number

Prime Number

Prime Number

Prime Number

Prime Number

Prime Number

Prime Number

Prime Number

Prime Number

Prime Number

```

In [72]: from array import *
        arr=array('i',[])
        n=int(input('Enter the next value'))
        for i in range(5):
            x=int(input('Enter the next value'))
            arr.append(x)
            print(arr)

```

array('i', [2])

array('i', [2, 3])

array('i', [2, 3, 4])

array('i', [2, 3, 4, 5])

array('i', [2, 3, 4, 5, 6])

Way of creating array using numpy

```

In [73]: from numpy import *
        arr=array([1,2,3,4,5])
        print(arr)
        type(arr)

```

[1 2 3 4 5]

Out[73]: numpy.ndarray

```

In [74]: print(arr.dtype)

```

int32

```
In [75]: arr=array([1,2,3,4,5.9])  
print(arr)
```

[1. 2. 3. 4. 5.9]

```
In [76]: print(arr.dtype)
```

float64

```
In [77]: arr2=array([1,2,3,4,5.9],float)  
arr2
```

Out[77]: array([1. , 2. , 3. , 4. , 5.9])

```
In [78]: arr3=array([1,2,3,4,5.9],int)  
arr3
```

Out[78]: array([1, 2, 3, 4, 5])

```
In [79]: import numpy as np
```

```
In [80]: arr4=np.linspace(0,16,10)  
arr4
```

Out[80]: array([ 0. , 1.77777778, 3.55555556, 5.33333333, 7.11111111,  
 8.88888889, 10.66666667, 12.44444444, 14.22222222, 16. ])

```
In [81]: arr5=np.arange(0,10,2)  
arr5
```

Out[81]: array([0, 2, 4, 6, 8])

```
In [82]: arr6=np.zeros(5)  
arr6
```

Out[82]: array([0., 0., 0., 0., 0.])

```
In [83]: arr7=np.ones(5)  
arr7
```

Out[83]: array([1., 1., 1., 1., 1.])

```
In [ ]:
```